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University of Kentucky

Commercial Feeds and Their Use in Kentucky in 1927

BULLETIN NO. 284



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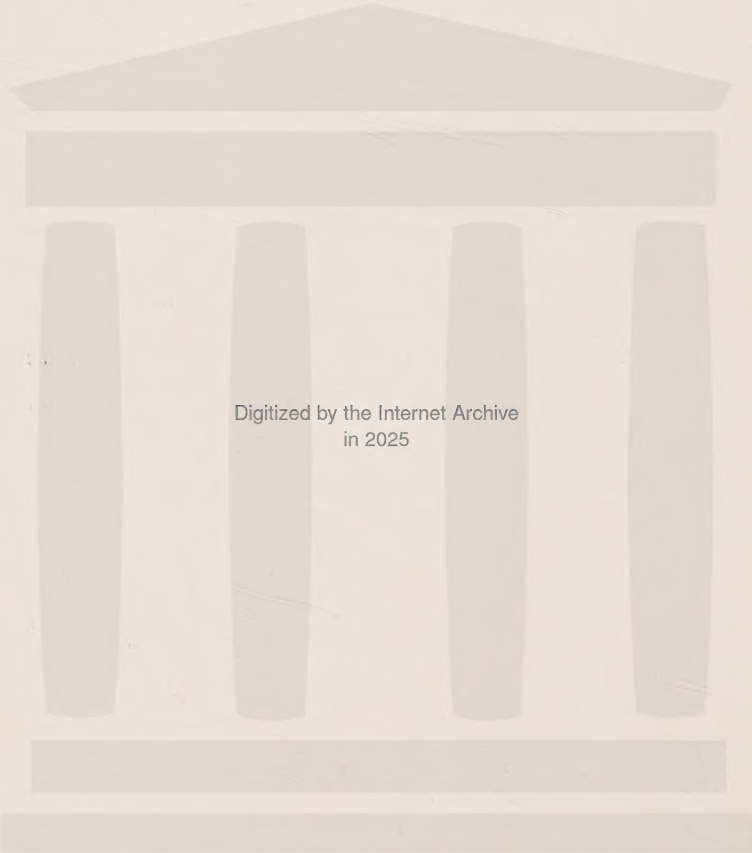
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BULLETIN NO. 284

Commercial Feeds and Their Use in Kentucky in 1927

By J. D. TURNER, H. D. SPEARS, W. G. TERRELL
and L. V. AMBURGEY

Any law that is based on right and justice and is properly administered, is a great educator. Its successful administration depends largely upon the cooperation of those whose interests it affects. The active interest and degree of cooperation of those so affected depend also on adequate knowledge of the provisions of the law and the ends to be secured in its proper operation. The operation of a law, therefore, must not only properly regulate or control, but it must be educative as well.

In the conduct of the feed control law of Kentucky this two-fold purpose has been kept in view. When it is realized that the feeders of the State pay annually an average of twelve million dollars for stock feed, exclusive of whole grains and roughages, it is very important that the feeder, as well as the manufacturer and distributor, understand the significance of the law and the various terms relative to the manufacture and distribution of this commodity. It is also essential that they understand the source and value of nutrients and the conditions that will cause a supply or a deficiency of nutritional factors in feed materials or their combinations. It is for this reason that the various terms used in the operation of the law are reviewed and discussed in this bulletin. For fuller study and information, see standard text books on feeds and feeding, or consult the Kentucky Agricultural Experiment Station and other experiment stations.

The claim is made by some manufacturers that the standards for feeds in Kentucky are too high and that due to such high standards Kentucky feeders are actually discriminated against. It is argued that on account of high standards the feeder uses less feeds and that he should be privileged to purchase any sort of feed he wishes, whether on price or quality and that if he buys a cheap and trashy feed, it is his own concern and not the State's. The claim is not justified. In fact, the amount of feeds consumed in Kentucky during 1927 exceeded the amount in 1926 by over twenty thousand tons, and if the standards influenced the sale in any way, it was towards a larger consumption.

PURPOSE OF THE LAW.

The purposes of the law may be summarized as follows:

1. To require all feeding stuffs to be registered and labeled showing what the manufacturer guarantees them to be.
2. To let the feeder know what he is buying and to protect him against inferior and adulterated feeds and short weights.
3. To protect the honest manufacturer against dishonest competition.
4. To promote a more economical and intelligent use of commercial feeds whether used as complete rations or as supplements to the materials produced on the farm.

INFORMATION REQUIRED.

The information required in registration of manufacturers or distributors of feeds and to be printed on the official tags, is:

1. Net weight of contents of bag.
2. The brand name of the feed.
3. Name and address of the manufacturer or dealer.
4. Minimum percentage of crude protein.
5. Minimum percentage of crude fat.
6. Maximum percentage of crude fiber.
7. The specific name of each ingredient used in making the feed.

8. If a material of little or no feeding value is used, such as grain screenings refuse, oat hulls, flax plant by-products, or any cheap, highly fibrous material, the percentage must be given.

9. If grain screenings are used, not only the percentage must be given and the declaration whether ground or unground, but the approximate percentage of weed seeds they contain must also be stated.

CHEMICAL STANDARDS

	Minimum	Minimum	Maximum
1. Standard By-Products:	Protein	Fat	Fiber
Mixed Wheat Feed	15.50%	4.00%	8.50%
Wheat Bran	14.50%	3.75%	10.00%
Brown Wheat Middlings or Shorts.....	16.00%	4.00%	7.50%
Gray Wheat Middlings or Shorts.....	16.00%	4.00%	6.50%
White Wheat Middlings or Shorts ...	16.00%	3.75%	4.00%
Flour Middlings.....			
Corn Feed Meal	8.00%	3.75%	5.00%
Cracked Corn	8.00%	3.50%	3.00%
Hominy Meal, Hominy Feed or			
Hominy Chop	10.00%	7.00%	6.00%
Alfalfa Meal .....	.....%	.....%	32.00%
Rye Middlings .....	.....%	.....%	6.00%
Ground Barley .....	.....%	.....%	6.50%
Ground Oats .....	.....%	.....%	12.00%
2. Special Purpose Mixed Feeds:			
Dairy Feed	15.00%	3.00%	16.00%
Horse and Mule Feed	9.00%	2.00%	15.00%
Hog Feed	14.00%	3.50%	7.00%
Laying Mash	18.00%	3.50%	8.00%
Scratch Feed .....	.....%	.....%	5.00%

Minimum standards for other special purpose mixed feeds will be made as occasion demands.

REGISTRATION REQUIREMENTS

3. General Requirements:

- (a) In making registrations, care should be exercised that the chemical guaranties will be reasonably close to the actual content of the feed. In other words, arbitrary guaranties will not be accepted.

- (b) If a material change is made in the guaranty of a feed, in effect lowering the value of the feed, the name of the feed must be changed also.
- (c) For oil mill by-products and digester tankages, the percentage of protein must form part of the name. For example, 41% Cotton Seed Meal, 34% Old Process Linseed Oil Meal, 60% Digester Tankage, etc.
- (d) Oil mill by-products containing hulls, screenings and similar materials, thus materially lowering the percentage of crude protein, cannot be called meals, but may be called meal and hulls, or meal and screenings, or feed, or by some proprietary name.
- (e) Any feed containing less than 9% protein must be called by the names of its ingredients.

4. **Essential Organic Ingredients:**

A feeding stuff must not contain less than 3% of any essential organic food ingredient listed in the guaranty. If an ingredient so listed is found to be less than 3%, the feed will be classed as misbranded.

5. **Mineral Ingredients:**

Mineral ingredients, generally regarded as dietary factors essential for the normal nutrition of animals, when added to a feed must not exceed 5%.

6. **Grit and Shell:**

The maximum amount of grit and shell, or of either, if only one is present, must not exceed 3%.

7. **Salt:**

The amount of salt in all stock and poultry feeds should not exceed 1%.

8. **Screenings:**


- (a) Percentage of screenings in wheat feeds and statement whether ground or unground, must be given.
- (b) In stock feeds the percentage of screenings and a statement whether ground or unground, is required and the percentage of weed seeds they contain must be given also. If the screenings have been "reworked" or "reconditioned," they must be called screenings refuse.

9. **Materials of Little or No Feeding Value:**

Percentage of materials of little or no feeding value must be stated.

METHOD OF TAGGING

The official tag carries the manufacturer's guaranty which should be scrutinized carefully. This information is sufficient for an understanding of the general make-up of the feed. If the feed is not tagged with a Kentucky tag, the buyer should not consider it. Buy only on the guaranty the Kentucky tag carries. Claims to the contrary should be disregarded. In addition to the information printed on the tags, a color scheme of three colors, black, red and yellow, is used to help the feeder recognize by a glance at the tag the general nature of the feed. The purpose of the color scheme is to classify feeds according to kind and quality and to give the feeder an additional warning and an opportunity to further investigate and study the feeds in question. The color scheme is indicated on the form tags shown below.

	<p>\$100 penalty for using this tag second time</p>	<p>100 POUNDS NET MIXED</p>	<p>Wheat Feed and Screenings</p>	<p>MADE BY JOHN DOE & CO., MILLVILLE, KY.</p>	<p>GUARANTEED ANALYSIS</p>	<p>Per Cent</p>
					<p>Protein 15.75</p> <p>Fat 4.25</p> <p>Fiber 8.50</p>	<p>MADE FROM: Wheat Bran, Wheat Middlings, Ground Wheat Screenings 5%</p>
<p>The above is the manufacturer's or dealer's guarantee and the sale of this package is authorized subject to the feed stuffs law.</p>				<p><i>James F. Doe</i> Director Ky. Agricultural Experiment Station, Lexington, Kentucky</p>		
				<p>124/27</p>		

A Manila Tag printed in Black Letters indicates a feed made of one grain or plant only, such as wheat bran, mixed wheat feed, cracked corn, cottonseed meal, meat meal, alfalfa meal, etc., commonly known as **Straight Feed**.



\$100 penalty for using this tag second time

100 POUNDS NET

FULL PAIL DAIRY FEED

MADE BY
JOHN DOE & CO.,
MILLVILLE, KY.

GUARANTEED ANALYSIS	
	Per Cent
Protein	20.00
Fat	4.50
Fiber	10.00

MADE FROM:
Wheat Bran, Wheat Middlings,
Corn Feed Meal, Corn Gluten Feed,
Hominy Feed, Linseed Oil Meal,
Cottonseed Meal

The above is the manufacturer's or dealer's guarantee and the sale of this package is authorized subject to the feed stuffs law.

John Doe
Director
Ky. Agricultural Experiment Station,
Lexington, Kentucky
125/27

A Manila Tag printed in **Red Letters** indicates a feed made of the products or by-products of two or more grains or cereals or plants, such as corn and wheat, or corn, wheat and oats, or corn feed meal, wheat mixed feed, corn gluten feed, cottonseed meal and alfalfa meal, etc., usually known as **Straight Mixed Feed**.



\$100 penalty for using this tag second time

100 POUNDS NET

"FIRST PRIZE"

BUTTER FAT DAIRY FEED

MADE BY
JOHN DOE & CO.,
MILLVILLE, KY.

GUARANTEED ANALYSIS	
	Per Cent
Protein	16.00
Fat	3.50
Fiber	15.00

MADE FROM:
Wheat Bran, Wheat Middlings,
Corn Feed Meal, Cottonseed Meal,
Clipped Oat By-product 15%, (Oat Middlings and Oat Hulls) 15%,
25 % Ground Grain Screenings containing 40% Weed Seeds

The above is the manufacturer's or dealer's guarantee and the sale of this package is authorized subject to the feed stuffs law.

John Doe
Director
Ky. Agricultural Experiment Station,
Lexington, Kentucky
126/27

A **Yellow Tag** printed in **Black Letters** indicates that the feed contains a material of little or no feeding value, such as oat hulls, clipped oat by-product, cob meal, cottonseed hulls, flax plant by-product, screenings refuse, etc., the names of such materials being printed in bold-face type. Such feeds are commonly known as **Adulterated** or **Yellow Tag Feeds**.

As a general proposition it is not economical to buy Yellow Tag Feeds.

ILLEGAL AND DISHONEST PRACTICES.

In the regular course of inspection and investigation of the manufacture and sale of feeding stuffs in Kentucky during the year, a number of illegal practices have been found. These fraudulent practices vary a great deal in form and extent—from minor violations to gross frauds. Such frauds are usually found in feeds in which grain screenings and highly fibrous and trashy materials are used. Some of these frauds are: 1. The use of ground corn screenings under the name of corn feed meal and hominy feed. 2. The use of ground corn screenings, corn bran and corn germ under the name of hominy meal or hominy feed. 3. The use of a mixture of screenings refuse, flax plant by-product, oat hulls, cocoa shells, sweepings, elevator dust and similar materials under the name of "grain screenings." 4. The use of a mixture of alfalfa meal and flax plant by-product under the name of alfalfa meal. 5. The addition of oat hulls in mixtures containing ground oats, and the use of oat by-products for ground oats in mixed feeds. 6. The use of alfalfa stem meal in highly fibrous mixed feeds under the name of alfalfa meal. 7. The use of inferior and damaged grains in mixed feeds containing grain screenings and screenings refuse. 8. The substitution of finely ground wheat bran for wheat middlings and wheat shorts. 9. Where grain screenings are used, the grains forming the important part of the screenings are listed as specific ingredients and the term "grain screenings" is listed to cover the trashy part of the screenings.

GRAIN SCREENINGS AND SCREENINGS REFUSE.

The term "screenings" has no definite meaning in connection with the manufacture and sale of feeding stuffs. Screenings vary widely in chemical and physical composition. There is no grade or standard for them. More fraud is practiced thru the use of screenings in feeds than thru any other channel in the feed industry. The so-called "grain screenings" used in stock feed are usually "screenings refuse," floor sweepings, grain dust, chaff, and other grain and plant waste. It is the custom of some manufacturers to purchase waste of various

sorts, such as oat hulls, cocoa shells, flax plant by product, floor sweepings, dust and screenings and mix them together on their own floors and use the mixture in stock feeds under the name of "grain screenings." Mixers who have tried this practice in Kentucky claim that it is a common practice of most manufacturers making cheap grades of stock feeds and that a ready sale is found for such feeds where price is considered before quality and especially is this true in the South.

The main objection to the use of grain screenings is the illegal manner in which they are used. Buyers of feed should consider very carefully any feed containing screenings, before accepting it.

MINERAL MIXTURES.

Mineral matter is of vital importance to animals. It is necessary in every ration and most common feeding stuffs contain the necessary mineral substances, tho they may be in small amounts. In some sections of the country where feed materials are grown, deficiencies may occur, but this is not generally the case. The modern methods of milling may cause a slight deficiency in mineral matter in feeds.

The roughages usually are much richer in mineral substances than the grains. This is especially true of the leguminous plants. If suitable roughages are not available and the rations are deficient in mineral substances, a mineral substitute may be added to the concentrates. Such materials as ground limestone, oyster shells, wood ashes, bone meal and ground rock phosphate are used to supply the necessary calcium and phosphorus. To supply iron, iron oxide is sometimes used.

The trade in mineral feeds has assumed a large volume in Kentucky and other states. Manufacturers of these products have sprung up rapidly in many parts of the country and by arousing a general interest, largely based on suggestions rather than facts, a tremendous business in mineral feeds has been the result. In the purchase of mineral feeds, discrimination should be exercised. Mineral feeds may be of value to farm animals under certain conditions but it may be generally stated that

farm animals do not need the highly complex and expensive mineral mixtures. Investigators describe the mineral requirements of animals to be simple and that when there is need of mineral nutrients other than salt, such requirements are commonly limited to calcium, phosphorus or iodine

The rules for classifying and labeling mineral feeds approved by the Association of Feed Control Officials of the United States are followed as closely as possible in the control and inspection of these products in Kentucky. These rules are:

(a) That mixed feed containing both feed and more than 5 per cent of mineral ingredients requires, in addition to the usual declaration of the chemical feed analysis, a declaration of each ingredient contained therein and the minimum percentages of lime (CaO), phosphoric acid (P_2O_5), iodine (I) and the maximum percentage of salt (NaCl) if same are added. If minerals predominate in the mixture the usual declaration of the chemical feed analysis, with the exception of protein, may be omitted.

(b) That mineral feeds containing no organic ingredient do not require the usual chemical feed guaranty, but do require a declaration of each ingredient contained therein and the minimum percentage of lime (CaO), phosphoric acid (P_2O_5), iodine (I) and the maximum percentage of salt (NaCl) if the same are present.

(c) That the mineral ingredients be stated in the common English terms, if any such terms exist.

(d) It being impossible to classify separately the drug ingredients and the mineral ingredients be it resolved:

(1) That all mixtures containing mineral ingredients generally regarded as dietary factors essential for the normal nutrition of animals and which are sold or represented for the primary purpose of supplying these minerals as additions to rations in which these same mineral factors may be deficient, be classified as mineral feeds.

(2) That all other preparations which are sold or represented primarily for the cure, mitigation or prevention of

disease be classified by this association as drugs, medicines or specifics.

Registration and application to sell mineral feeds in Kentucky are made in the same manner as for commercial feeds. After registration has been properly made, labels are issued by the Department of Feed Control in the usual way. The specimen label following shows the form used in Kentucky.

O	<p>\$100 penalty for using this tag second time</p> <p>100 POUNDS NET</p> <p>HOG MINERAL</p>	<p>MADE BY</p> <p>JOHN DOE & CO., MILLVILLE, KY.</p>	<p>GUARANTEED ANALYSIS</p> <table border="0"> <tr> <td></td> <td style="text-align: right;">Per Cent</td> </tr> <tr> <td>Lime (CaO)</td> <td style="text-align: right;">15.00</td> </tr> <tr> <td>Phosphoric Acid (P₂O₅)</td> <td style="text-align: right;">8.00</td> </tr> <tr> <td>Salt (NaCl)</td> <td style="text-align: right;">12.00</td> </tr> <tr> <td>Iodine (I)</td> <td style="text-align: right;">0.03</td> </tr> </table>		Per Cent	Lime (CaO)	15.00	Phosphoric Acid (P ₂ O ₅)	8.00	Salt (NaCl)	12.00	Iodine (I)	0.03	<p>MADE FROM:</p> <p>Steam Bone Meal, Bone Black, Oyster Shells, Potassium Carbon- ate, Salt, Charcoal, Soda, Sulfur, Iron Oxide, Yeast, Glauber's Salt, Potassium Iodide, Epsom Salt.</p>	<p>The above is the manufacturer's or dealer's guarantee and the sale of this package is authorized subject to the feed stuffs law.</p>	<p><i>John Doe</i> Director</p>	<p>Ky. Agricultural Experiment Station, Lexington, Kentucky</p>	<p>100-M/27</p>
					Per Cent													
Lime (CaO)	15.00																	
Phosphoric Acid (P ₂ O ₅)	8.00																	
Salt (NaCl)	12.00																	
Iodine (I)	0.03																	

The materials most commonly used in mineral mixtures by manufacturers now registered in this state are listed below, under their chemical and common English names.

Common English Name	Chemical Name
Alum	Potassium Aluminum Sulfate, crystallized
Baking Soda	Sodium Bicarbonate
Bluestone or Blue Vitriol	Copper Sulfate, crystallized
Bone Black	Tricalcium Phosphate + Carbon
Bone Phosphate	Tricalcium Phosphate
Borax	Sodium Biborate
Charcoal (Wood)	
Chile Saltpeter	Sodium Nitrate
Common Salt	Sodium Chloride
Copperas	Ferrous Sulfate, crystallized

Common English Name	Chemical Name
Cream of Tartar	Potassium Bitartrate
Epsom Salt	Magnesium Sulfate, crystallized
Flowers of Sulfur	Sulfur, sublimed
Glauber's Salt	Sodium Sulfate, crystallized
Green Vitriol	Ferrous Sulfate, crystallized
Hyposulfite of Soda	Sodium Thiosulfate, crystallized
Iodine	Potassium Iodide } (source)
	Sodium Iodide }
Iron Oxide	Ferric Oxide
Iron Protosulfate	Ferrous Sulfate
Iron Sulfate	Ferrous Sulfate
Lime	Calcium Oxide
Limestone	Calcium Carbonate
Magnesia	Magnesium Oxide
Manganese Sulfate	Manganous Sulfate, crystallized
Oyster Shells	Calcium Carbonate
Phosphoric Acid	Phosphorus Pentoxide
Phosphatic Limestone	Calcium Carbonate + Tricalcium Phosphate
Potassium Iodide	Potassium Iodide
Rock Phosphate	Tricalcium Phosphate
Sal Soda	Sodium Carbonate, crystallized
Soda Ash	Sodium Carbonate, anhydrous
Salt	Sodium Chloride
Saltpeter	Potassium Nitrate
Sodium Carbonate	Sodium Carbonate, anhydrous
Sodium Sulfate	Sodium Sulfate, anhydrous
Sulfur	Sulfur
Superphosphate	Monocalcium Phosphate
Tartar Emetic	Antimony + Potassium Tartrate
Washing Soda	Sodium Carbonate, crystallized

THE CHEMICAL ANALYSIS AND EXPLANATION OF TERMS USED.

The law of the State requires a statement of the percentages of protein, fat and fiber in all feeds, the idea being that this information, with the other data concerning the ingredients, would protect the purchaser and enable him to buy his feed intelligently. However, the careful preparation of a ration requires a more complete knowledge of the composition of feeding stuffs.

Besides protein, fat and fiber, the ordinary "complete" analysis includes the determination of water, ash and nitrogen-free extract.

Sometimes special determinations must be made. For example, in molasses feeds, it is often necessary to know the sugar and moisture content. In feeding materials such as silage, it is desirable to know the acidity, since this determination is an index as to the palatability of the material. In animal materials, the amount of phosphate is determined in order to ascertain whether the material should be classified as a meat material or a meat and bone mixture. In feeds containing screenings, sweepings, dust and refuse from mills and elevators, it is very desirable to determine the amount of sand.

Protein is the name given to organic nitrogenous materials essential to plant and animal life. It contains about 16 per cent of the element nitrogen and its amount is obtained simply by multiplying the amount of total nitrogen found by analysis, by the factor, 6.25. Protein is the most important as well as the most costly constituent in a feed and the value of the feed depends very largely on the amount of this constituent it contains. It produces flesh, muscle, ligaments, glandular secretions, milk, blood, tendons, hair, hoof, hide, and is found in all parts of the animal body, including the bones which contain 25 or 30 per cent.

Fat is that part of a feeding stuff soluble in ether. It covers fats, oils, wax, resins and chlorophyl, the last three of no known importance and present only in minute quantities. Fats produce heat and energy, their value for such being $2\frac{1}{4}$ times that of either carbohydrates or protein. Therefore, they serve to prevent undue waste of protein in the body. The fatty tissues, by forming a cushion, also serve as a protection to the other tissues of the body.

Fiber, the insoluble carbohydrate, is the woody portion or structural material of plants and the outer coating of grain. When present in large quantities it exerts a retarding influence on the digestion of nutrients present in feeding stuffs, as it is

itself only partially digested by animals. Its chief value appears to lie in its mechanical effect in the intestinal tract.

Ash contains the inorganic or mineral constituents which are present in all feeds. These mineral constituents form the bony structures and are found in all the vital tissues and secretions of the animal body. Their importance may be realized when we recall experiments which show that animals deprived of mineral matter generally die sooner than when no feed is given them at all. Some of the more important mineral constituents found in plants are compounds of sulfur, chlorin, phosphorus, potassium, sodium, calcium, magnesium, manganese and iron. Grains, seeds and tubers are deficient in calcium, sodium and chlorin. Legumes and the hay made from them, corn stover and the leafy parts of plants generally contain sufficient quantities of these substances. The common practice of giving salt to livestock is to supply the need for sodium and chlorin.

Considerable work is being done on other more less abundant mineral constituents in an effort to establish their importance in the animal metabolism. The importance of the well-known mineral constituents has been emphasized during the past year thru the appearance on the market in increasing amounts of the so-called mineral feeds herein already mentioned.

Water is composed of hydrogen and oxygen. The amount of water in a commercial feeding stuff depends upon the character of the materials from which the feed is made, their age or state of greenness, the process of manufacture and atmospheric conditions. Some by-product feeds have had their original water content altered. The amount of water in sweet feeds is affected by the amount of molasses they contain and the water content of the same.

The presence of water in commercial feeding stuffs adds nothing to their value as food because the animals receive their supply of water from other sources. Any amount of water other than that necessary to keep the feeding stuff in proper condition, reduces the value of the feed by reducing the percentages of the desirable substances. An excessive amount of water lowers the keeping qualities of the feed.

Nitrogen-free Extract is that part of the carbohydrates which remains after deducting the crude fiber. It contains the more readily digestible carbohydrates; therefore, knowledge of the amount present is important. The chemist estimates the percentage of nitrogen-free extract by subtracting from 100 the sum of the percentages of water, ash, protein, fat and fiber found by analysis.

Nitrogen-free Extract is of importance as a source of heat, nervous and muscular energy. While it does not have as great a power in this respect as fat, it is present in such large quantities in feeds that it serves an important part. The members of this group of constituents differ in nutritive value on account of the wide variance in their digestibility. The starches and sugars are readily soluble and almost completely digested, while pentosans and other less well-known substances are digested with much more difficulty and less completely. Nitrogen-free extract may be converted into fats in the animal body and any excess over the immediate needs of the body is stored as fat in the tissues.

The percentage of *carbohydrates*, as noted above is the sum of the percentages of Crude Fiber and Nitrogen-free Extract.

MICROSCOPICAL ANALYSIS.

Every sample of feed that comes into the laboratory is subjected to a microscopical examination. The purpose of this examination is to see what products are present in the feed.

Feeds sold on the market are made from grains, grain products, various by-products, and roughages. These products may be sold unmixed or in mixtures of from two to a dozen or more materials. Molasses and small amounts of salt and other minerals are frequently added to these mixtures. By a microscopical examination is determined what materials are present in a feed, and knowledge is obtained of the proportions in which they are mixed. The microscopist also notes the physical condition of the feed, its odor, the kind and quality of the materials used, and if any objectionable materials are present.

IMPORTANCE OF KNOWING INGREDIENTS AND THEIR COMPOSITION.

A number of factors may influence more or less the nutritive value of feeds. With grains, hays, etc., the climate, the season, and the stage of maturity are the most important factors which influence their composition. The composition of a crop is also influenced to a limited extent by the amount of available plant food in the soil on which the crop is grown. The roughages are more variable than the grains because their composition is more easily influenced by the stage of maturity, the manner of curing and the moisture content. The same is true of the mill by-products; and the variation in animal by-products is no less marked, due to different methods of preparation and storing, and to the water content.

Prepared or proprietary feeds are influenced in quality, also, by a number of factors which may be described as man-made to distinguish them from the natural forces or factors which influence individual crops. Some of these factors are: The use by the manufacturer of inferior or low-grade materials; the substitution in whole or in part of a lower-grade material for a high-grade; the use of an adulterant as a filler; the use of molasses to cover up low-grade, trashy materials; storing the feed in a place which influences the water content, etc.

A knowledge of the analysis and general character of either the straight by-products and cereals or mixtures of these is therefore essential to the intelligent feeder. Without such knowledge, the feeder can neither buy his feeds nor make up his rations intelligently. A knowledge of the amounts of crude protein and fiber a feed contains serves as an index. A high percentage of fiber in a feed is a general indication that the percentages of the essential nutrients in that feed are correspondingly low and their digestibility impaired by the presence of excess fiber. Much fiber is not always objectionable; in fact, with ruminants roughages are essential, but with animals having small stomachs, much fibrous material in the feed is undesirable. If fillers, such as hulls, sweepings, dust, refuse, screenings, screenings refuse, etc., are used in feeding stuffs, the feeder

usually pays about the same price for the filler or fiber, which he usually has in abundance on his farm, as he does for the actual food in first-class materials. He suffers a financial loss in buying such materials, while his animals may suffer for the lack of sufficient nourishment.

The amount of nitrogen-free extract may serve as a further index of the character of the feed, since a high nitrogen-free extract indicates a better grade of feed. In analyses of materials or combinations of materials where the amount of nitrogen-free extract is not given, this may be computed by adding together the amounts of protein, fat, fiber, water and ash and subtracting this total from 100. In case the amounts of water and ash are not given and cannot be gotten from the tables of analyses, the average percentages of water and ash in similar materials or their combinations may be used as a basis for calculation, tho the proportions of water and ash vary. An ample number of analyses of straight feeds or standard by-products are available, the averages of which give the feeder reasonably accurate knowledge of the composition of the feeds under consideration. The average percentage of water may be taken as 10, the percentage of ash in whole grains, 2.5, and in their by-products, 4.50. For example, the approximate percentage of nitrogen-free extract in a mixed feed composed of corn feed meal, wheat bran, wheat shorts, cottonseed meal and alfalfa meal, with an analysis given as 16.5 per cent protein, 4.50 per cent fat and 12.5 per cent fiber, can be obtained as follows: Taking 10 per cent as the average moisture and 4.5 per cent as the average ash, add together 16.5, 4.5, 12.5, 10.0 and 4.5 giving 48.0; subtract this from 100 and we have 52 per cent as the amount of nitrogen-free extract.

Likewise, the nitrogen-free extract can be computed from other formulas where part of the figures can be obtained from the guaranty on the label and the average figures taken on standard materials. These results are not accurate, but will help in forming a judgment as to the character of the feed.

Besides obtaining knowledge of the chemical composition of feed materials the chemical analysis aids in determining whether

a feed is misbranded or adulterated. In the case of straight feeds such as cottonseed meal and wheat by-products the chemical analysis serves as an index for classification. There are six kinds of wheat by-products and three grades of cottonseed meal recognized by the trade thru their chemical analysis. As a means for standardization the chemical analysis is increasing in importance each year. It is as important as an index in determining whether feeding materials come up to the standards, as it is thru giving knowledge of the actual food value according to percentages of protein, fat, nitrogen-free extract, etc., found.

However, in addition to the chemical analysis, it is not only important but very necessary that a microscopical examination be made. The chemical and microscopical examinations are therefore supplementary to each other. The chemical analysis determines the chemical nature of the feed, but the proper interpretation of the analysis is seldom practicable without the aid of the microscopical examination as already stated. The microscopical examination identifies the exact constituents or ingredients of the feed. This is possible from the fact that each plant is composed of cells, these cells forming tissues, which are characteristic, for the most part, of each particular species of plant. In a ground feed the various cells and tissues can be seen and identified with the microscope.

From the microscopical examination we are able to judge: First, whether the feed contains the guaranteed ingredients and the quality of each. Second, whether it contains additional ingredients and whether or not they are adulterants. Third, whether any of the ingredients are present in such small proportions that their presence does not affect materially the nature of the feed. Previous to the 3% ruling ingredients were added in very small amounts merely to meet the guaranty in name, but not in fact.

The products from which feeds are made vary not only in chemical analysis, but in palatability, digestibility, purity, etc. Hence, it is not only highly desirable to know how much protein, fat and fiber are present in a feed, but the source of

these nutrients as well. For example in a feed that analysis shows to be high in fiber, it is desirable to know whether this fiber is due to the presence of alfalfa meal or to oat hulls. Again if a feed is shown by analysis to be low in protein, the question arises as to whether this low protein is due to an inferior low-protein adulterant or to wheat flour, a product low in protein, but highly digestible, and therefore relatively desirable. The microscopical examination shows which of these products is present.

If a feed diverges widely from the guaranty as to chemical constituents, it is a strong indication that some ingredient has been left out, something added, or the proportions of the ingredients materially changed. The microscopical examination shows the nature of these changes.

Probably too much importance has been given in the past to the guaranteed chemical analysis and not enough to the guaranteed ingredients. Because of this unscrupulous manufacturers have met their chemical guarantees, but not with the ingredients guaranteed.

The importance of the microscopical examination becomes more pronounced each year. There are hardly as many as fifty materials in general use as feeding stuffs and the products from them are becoming more standardized each year. And the better standardized the product, the easier it is for the microscopist to classify it. It becomes increasingly pronounced, that when only relatively well standardized products are used in mixed feeds the microscopist can tell with the aid of the chemist, within reasonable bounds the percentage composition of the ingredients. If he goes far wrong it is generally because of the presence of some product which has a widely variable composition. The 3% ruling on the essential ingredients has helped the microscopist greatly, and it is not a difficult matter to tell if an ingredient is left out, an inferior one added, or a substitution made. The definitions adopted by the Association of Feed Control Officials are a great help to both chemist and microscopist. Quite frequently samples of "feed" with absolutely no data come to the laboratory for analysis. If it were not for the ex-

perience of the present day feeding stuffs microscopist these samples would be very unsatisfactory to handle; yet today we are able to get a fairly clear idea of the amounts of ingredients present if they represent materials classified in the definitions of the Feed Control Officials. Another very important feature of microscopical examination is the fact that it serves as a check on the chemical analysis and it is safe to say that hundreds of duplicate analyses have been saved thru the microscopical examinations.

NUTRITIVE RATIO.

The term, nutritive ratio, is frequently used in discussion and writing of feeds and their use, but is not always understood. Its meaning should be familiar to all feeders. It is the ratio between the amount of digestible protein and the amount of digestible carbohydrates (fiber plus the nitrogen-free extract) and fat (ether extract) combined which a given feed contains, based on their energy values. Protein and carbohydrates have the same energy-producing value, but fat has 2.25 times as much as either. In calculating a nutritive ratio of a feed, therefore, fat must be put on the same energy basis as the carbohydrates, which is done by multiplying the percentages of digestible fat in a given feed by 2.25.

As an example, take a dairy feed containing 16.5 per cent of digestible protein, 3.6 per cent of digestible fat and 50.5 per cent of digestible carbohydrates, we have, by completing the conditions: carbohydrates, 50.5, plus 8.1 (fat, 3.6 times 2.25) divided by protein, 16.5, or $58.6 \div 16.5 = 3.55$, or a nutritive ratio of 1:3.6. In this way the nutritive ratio of any feed in which the digestible nutrients are known can be calculated.

Any feed having a large percentage of digestible crude protein in proportion to the digestible crude carbohydrates and fat combined, is considered as having a narrow nutritive ratio. Examples: highly concentrated feeds such as cottonseed meal, linseed meal, corn gluten feed and meal, wheat shorts, etc., or any mixture of such materials, have very narrow nutritive

ratios; while the less concentrated materials such as hays, straws, grains and meals, etc., have wide nutritive ratios.

BALANCED RATION.

A ration is the feed given an animal during a day. A balanced ration is one in which the nutritive ratio is right; that is, furnishes digestible proteins, carbohydrates and fats, in such amounts and proportions as are necessary to nourish a given animal in a day. Recent investigations have shown that the proportion of digestible protein to digestible energy producing nutrients, in the correct nutritive ratio, while of fundamental importance, is only one of the essentials to proper nutrition. To bring about proper nutrition other things must be considered besides the proportions of digestible nutrients. Digestible proteins from different materials are not equally nutritious and certain food factors, called vitamins, and mineral substances are necessary to the nutrition and well-being of animals. Investigators are actively engaged in study along these new lines and ideas in regard to animal nutrition and the properties of feed-stuffs are being somewhat modified.

In the present state of development of information on these new lines of thought, we may say, however, that a satisfactory ration should satisfy the following conditions, and both manufacturer and feeder should keep these conditions in mind:

1. Contain sufficient digestible, complete proteins and digestible energy-producing substances (such as starch, fat, sugar) in the right proportions.
2. Contain the proper amount of indigestible fibrous material, such as is found in the fibrous parts of plants.
3. Contain the vitamins in adequate amounts.
4. Contain the right kinds of mineral matter in adequate amount.
5. Be free from injurious substances, such as poisons, especially cumulative poisons, disease germs or anything that produces mechanical injury.

VITAMINS.

It has been pointed out in the discussion of a balanced ration on a preceding page of this bulletin that a number of nutritional factors are necessary to proper nourishment, the absence or deficiency of any one of which may cause trouble. Important in this class are the substances called vitamins. The principal source of proteins, carbohydrates and mineral matter are pretty well known, but this is not the case with vitamins. A short review of the present state of our knowledge of the vitamins and their sources, therefore, is given as a matter of general information.

These substances called vitamins, so important in nutrition, are found in most food materials, but not in all, nor all in the same material. They are present in very small quantities in feeding stuffs. Surveys of their sources, both vegetable and animal, have been made with a view of furnishing suitable rations of high vitamin character for special cases. Manufacturers of commercial feeds endeavor to include in their formulas materials supposed to be relatively high in vitamins and emphasize this in their advertising matter.

The list of vitamins which have been recognized and accepted is as follows:

Vitamin A. This is called the growth promoting vitamin. It is present in green leaves, butterfat and egg-yolk fat, whole fresh milk and in larger proportion in liver oils and especially cod liver oil. The best available source of this vitamin, especially for feeds for livestock, is cod liver oil.

Vitamin B. This vitamin is known as the antineuritic vitamin. It is found in adequate quantity in many natural feed stuffs, such as green leaves and growing parts of plants; grain, especially in the germ; in animal food, and in larger proportion in yeast. The greatest and most available single source of this vitamin for stock feeds is yeast and next come the cereal grains and their germs or hearts.

Vitamin C. This is the antiscorbutic vitamin in the absence of which scurvy results. It is found in fresh oranges, tomatoes, citrus fruits, green leaves and vegetables, and is developed in

sprouting grains. The best sources of this vitamin seems to be fresh oranges and tomatoes. The best forms for use for domestic animals are the sprouting grains and green leaves.

Vitamin D. This vitamin is known as the antirachitic vitamin. It is oil-soluble like Vitamin A. It is present in the livers of fish and other animals and so abundantly in cod liver oil that this is regarded as a specific for rickets. It has been demonstrated that irradiated (having been recently exposed to ultraviolet light or to direct sunlight) food substances, such as the sterols commonly present in animal and vegetable oils and fats, produce the same effect as vitamin D. Much importance, therefore, is being placed on the practical effects of the application of sunlight and ultra-violet radiation.

Vitamin E. This vitamin is called the reproductive vitamin. Without it, according to information of those who have worked on it, the reproductive function is lost. It is present in most vegetable and animal oils and especially oils from wheat germ and, naturally, wheat germs themselves.

DEFINITIONS.

It is important that those who are interested in feeding stuffs, whether feeders or mixers, become familiar with the names and descriptions as well as the food values of materials used in the feed industry.

Many of the leading products are so uniformly made, in the manufacture of other articles of commerce, that they have become standardized and classified and defined to come within certain limits.

The Association of Feed Control Officials of the United States has formulated definitions for most of the terms in general use in relation to feeds. These definitions are followed as closely as possible where conditions in Kentucky will permit. They are published here for the general information they contain.

Additional information as to the average composition of the materials named (Table I), the average digestibility of the

nutrients (Table II), and the average amounts of digestible nutrients (Table III), may be obtained from the tables which follow the definitions.

ALFALFA PRODUCTS.

Alfalfa Leaf Meal is the product, consisting chiefly of leafy materials separated in the milling of alfalfa hay, which has been ground. It must be reasonably free from other crop plants and weeds and must not contain more than 18 per cent of crude fiber.

Alfalfa Meal is the product obtained from the grinding of the entire alfalfa hay, without the addition of any alfalfa stems, alfalfa straw or foreign material. It must be reasonably free from other crop plants and weeds, and must not contain more than 33 per cent of crude fiber.

Alfalfa Stem Meal is the product obtained by grinding the residue remaining after the removal of the leafy materials from alfalfa hay. It must be reasonably free from other crop plants and weeds.

ANIMAL PRODUCTS

Blood Meal is ground dried blood.

Cracklings is the residue after partially extracting the fat and oils from animal tissues, exclusive of hoof, horn, manure, and stomach contents, by an open kettle or by dry rendering process.

Digester Tankage is the residue from animal tissues, exclusive of hoof, horn, manure, and stomach contents, especially prepared for feeding purposes, by tanking under live steam, and by suitable drying and grinding. It shall not contain more than 10 per cent of phosphoric acid (P_2O_5). If this product contains more than 10 per cent phosphoric acid (P_2O_5) it shall be designated "Meat and Bone Digester Tankage."

Meat Scrap and Meat Meal are the ground residue from animal tissues, exclusive of hoof and horn, and contain less than 10 per cent phosphoric acid (P_2O_5). If they bear a name descriptive of their kind, composition, or origin, they must correspond thereto.

Meat and Bone Scrap and Meat and Bone Meal are the ground residues from animal tissues, exclusive of hoof and horn, and contain more than 10 per cent phosphoric acid (P_2O_5). If they bear a name descriptive of their kind, composition, or origin, they must correspond thereto.

BARLEY PRODUCTS.

Barley Hulls are the outer covering of the barley.

Barley Feed is the entire by-product resulting from the manufacture of pearl barley from clean barley.

Barley Mixed Feed is the entire offal from the milling of barley flour from clean barley and is composed of barley hulls and barley middlings.

Ground Barley is the entire product obtained by grinding clean sound barley, containing not less than 90 per cent pure barley and not more than 10 per cent of other grains, weed seeds and other foreign material and not more than 6 per cent fiber. Provided that no portion of this stated 10 per cent of other grains, weed seeds or other foreign materials shall be deliberately added.

Mixed Feed Barley is the entire product obtained by grinding country run barley containing not less than 75 per cent pure barley and not more than 25 per cent of other grains, weed seeds and other foreign material. Provided that no portion of this stated 25 per cent. of other grains, weed seeds or foreign material shall be deliberately added. The ingredients must be stated as barley, other grains, weed seeds and other foreign materials.

BREWERS' AND DISTILLERS' PRODUCTS

Brewers' Dried Grains are the properly dried residue from cereals obtained in the manufacture of beer.

Distillers' Dried Grains are the dried residue from cereals obtained in the manufacture of alcohol and distilled liquors. The product shall bear the designation indicating the cereal predominating.

Distillers' Corn Solubles, a by-product from the manufacture of alcohol from rye, is a mash liquor concentrated after the removal of the alcohol and wet grains.

Distillers' Corn and Rye Solubles, a by-product from the manufacture of alcohol from corn and rye, is a mash liquor concentrated after the removal of the alcohol and wet grains.

Distillers' Rye Solubles, a by-product from the manufacture of alcohol from rye, is a mash liquor concentrated after the removal of the alcohol and wet grains.

Malt Sprouts are the sprouts of the barley grain obtained in the malting process. Sprouts derived from any other malted cereal must be designated by the name of that cereal.

Yeast or Vinegar-Dried Grains are the properly dried residue from the mixture of cereals, malt and malt sprouts (sometimes cottonseed meal) obtained in the manufacture of yeast or vinegar, and consist of corn or corn and rye from which most of the starch has been extracted, together with malt added during the manufacturing process to change the starch to sugars, and malt sprouts (sometimes cottonseed meal) added during the manufacturing process to aid in filtering the residue from the wort and serve as a source of food supply for the yeast.

BUCKWHEAT PRODUCTS

Buckwheat Shorts or Buckwheat Middlings are that portion of the buckwheat grain immediately inside of the hull after separation from the flour.

CORN PRODUCTS

Corn Bran is the outer coating of the corn kernel.

Corn Feed Meal is the by-product obtained in the manufacture of cracked corn, with or without aspiration products added to the siftings. This name is also correctly applied to the by-product obtained in the manufacture of table meal from whole grain by the non-degerming process.

Corn Germ Cake is the product obtained in the manufacture of starch, glucose and other corn products and consists of the germ from which part of the corn oil has been extracted.

Corn Germ Meal is ground corn germ cake.

Grits are the hard, flinty portions of Indian corn containing no bran or germ.

Corn Gluten Meal is that part of commercial shelled corn that remains after the separation of the larger part of the starch, the germ and the bran, by the processes employed in the manufacture of corn-starch and glucose. It may or may not contain corn solubles.

Corn Gluten Feed is that portion of commercial shelled corn that remains after the separation of the larger part of the starch and the germs by the processes employed in the manufacture of cornstarch and glucose. It may or may not contain corn solubles.

Maltose Process Corn Gluten Feed is the dried residue from degermed corn, after removal of starch in the manufacture of malt syrup.

Hominy Feed, Hominy Meal or Hominy Chop is the kiln-dried mixture of the mill-run bran coating, the mill-run germ, with or without a partial extraction of the oil, and a part of the starchy portion of the white corn kernel obtained in the manufacture of hominy, hominy grits, and corn meal by the degerming process.

Yellow Hominy Feed, Yellow Hominy Meal or Yellow Hominy Chop is a kiln-dried mixture of the mill-run bran coating, the mill-run germ, with or without a partial extraction of the oil, and a part of the starchy portion of the yellow corn kernel obtained in the manufacture of yellow hominy grits and yellow corn meal by the degerming process.

Corn Oil Cake consists of the corn germ from which part of the oil has been pressed and is the product obtained in the wet milling process of manufacture of corn starch, corn syrup, and other corn products.

Corn Oil Meal is ground corn oil cake.

Corn Germ Cake consists of corn germ with other parts of the corn kernel from which part of the oil has been pressed, and is the product obtained in the dry milling process of manufacture of corn meal, corn grits, hominy feed, and other corn products.

Corn Germ Meal is ground corn germ cake.

OIL CAKE

Oil Cake is the product obtained after the extraction of part of the oil by crushing, cooking and hydraulic pressure, or by crushing, heating and the use of the solvents, from seeds which have been screened and cleaned of weed seeds, and other foreign materials by the most improved commercial process. When used alone the term "Oil Cake" shall be understood to designate linseed cake as defined. When used to cover any other product the name of the seed from which it is obtained shall be prefixed to the words "Oil Cake."

Oil Meal or Ground Oil Cake is oil ground to a meal.

COTTONSEED PRODUCTS

Cottonseed Meal is a product of the cottonseed only, composed principally of the kernel with such portion of the hull as is necessary in the manufacture of oil; provided that nothing shall be recognized as cottonseed meal that does not conform to the foregoing definition and that does not contain at least 36 per cent of protein. Cottonseed meal shall be graded and classed as follows:

1. **Cottonseed Meal, Prime Quality.** Cottonseed meal, prime quality, must be finely ground, not necessarily bolted, of sweet odor, reasonably bright in color, yellowish, not brown or reddish, free from excessive lint and shall contain not less than 36 per cent of protein. It shall be designated and sold according to its protein content. Cottonseed meal with 36 per cent of protein shall be termed "36 per cent protein Cottonseed Meal, Prime Quality," and higher grades similarly designated (as "43 per cent Protein Cottonseed Meal, Prime Quality"), etc.

2. **Cottonseed Meal, Off Quality.** Cottonseed meal not fulfilling the above requirements as to color, odor and texture shall be graded "36 per cent Protein Cottonseed Meal, Off Quality," and higher grades similarly designated.

Cottonseed Feed is a mixture of cottonseed meal and cottonseed hulls, containing less than 36 per cent of protein.

Cold Pressed Cottonseed is the product obtained from the subjection of the whole undecorticated cottonseed to the cold pressure process for the extraction of oil and includes the entire cottonseed less the oil extracted.

Ground Cold Pressed Cottonseed is the product obtained by grinding cold pressed cottonseed.

LINSEED AND FLAX PRODUCTS.

Linseed Cake or Meal is oil cake or meal made from flaxseed, provided that the final product shall contain less than 6 per cent. of weed seeds and other foreign materials and, provided, further that no portion of the stated 6 per cent of weed seeds and other foreign materials shall be deliberately added.

Old Process Oil Meal, Old Process Linseed Meal is oil meal as defined or linseed meal as defined produced by crushing, cooking and hydraulic pressure.

New Process Oil Meal, New Process Linseed Meal is oil meal as defined or linseed meal as defined produced by crushing, heating and the use of solvents.

Flax Plant By-Product is that portion of the flax plant remaining after the separation of the seed, the bast fiber and a portion of the shives, and consists of flax shives, flax pods, broken and immature flax seeds, and the cortical tissues of the stem.

Ground Flaxseed or Flaxseed Meal is the product obtained by grinding flaxseed which has been screened and cleaned of weed seeds and other foreign materials by the most improved commercial processes provided that the final product shall contain less than four per cent. of weed seeds and other foreign materials, and provided further that no portion of the stated four per cent of weed seeds and other foreign materials shall be deliberately added.

Unscreened Flaxseed Oil Feed Cake is the product obtained by extraction of part of the oil from unscreened flaxseed by crushing, cooking and hydraulic pressure, or by crushing, heating and the use of solvent. The ingredients shall be stated as partially extracted flaxseed and foreign seeds (wheat, wild buckwheat, pigeon grass, wild mustard, etc.).

Ground Unscreened Flaxseed Oil Feed is the ground unscreened flaxseed oil feed cake.

Screenings Oil Feed is the ground product obtained after extraction of part of the oil by crushing, cooking and hydraulic pressure, or by crushing, heating and the use of solvents from the smaller imperfect grains, weed seeds and other foreign materials, having feeding value, separated in cleaning the grain. The name of the grain from which the screenings are separated shall be prefixed to "screenings oil feed."

OAT PRODUCTS.

Oat Groats are the kernels of the oat.

Oat Hulls are the outer coverings of the oat.

Oat Middlings are the floury portions of the oat groat obtained in the milling of rolled oats.

Oat Shorts are the covering of the oat grain lying immediately inside the hull, being a fuzzy material carrying with it considerable portion of the fine floury part of the groat obtained in the milling of rolled oats.

Clipped Oat By-Product is the by-product obtained in the manufacture of clipped oats. It may contain the light chaffy material broken from the end of the hulls, empty hulls, light, immature oats and dust. It must not contain an excessive amount of oat hulls.

PEANUT PRODUCTS

Peanut Oil Cake is the residue after the extraction of part of the oil by pressure or solvents from peanut kernels.

Peanut Oil Meal is ground peanut oil cake.

Unhulled Peanut Oil Feed is the ground residue obtained after extraction of part of the oil from whole peanuts, and the ingredients shall be designated as **Peanut Meal and Hulls**.

RICE PRODUCTS

Rice Bran is the pericarp or bran layer of the rice, with only such quantity of hull fragments as is unavoidable in the regular milling of rice.

Rice Hulls are the outer covering of the rice.

Rice Polish is the finely powdered material obtained in polishing the kernel.

RYE PRODUCTS

Rye Bran is the coarse outer covering of the rye kernel as separated from the clean and scoured rye.

Rye Feed, a by-product obtained in the usual process of the milling of rye flour from cleaned and scoured rye grain, consists principally of the mill-run of the outer covering of the rye grain and the germ with small quantities of flour and aleurone.

Rye Red Dog, a by-product obtained in the usual process of the milling of rye flour, consists principally of aleurone with small quantities of flour and fine bran particles and shall not contain more than 3.5 per cent of fiber.

Rye Low Grade Feed Flour consists principally of dark rye flour and small quantities of aleurone and fine bran particles and shall not contain more than 1.5 per cent crude fiber.

Rye Middlings consists of the rye feed and rye red dog combined in the proportions obtained in the usual process of milling rye flour.

Rye Flour Middlings consists of the rye feed, rye red dog and pure dark rye flour combined in the proportions obtained in the milling of rye flour and shall not contain more than 5 per cent crude fiber.

VELVET BEAN PRODUCTS

Velvet Bean Meal is ground velvet beans containing only an unavoidable trace of hulls or pods.

Ground Velvet Bean and Pod is the product derived by grinding velvet beans "in the pod." It contains no additional pods or other materials.

WHEAT PRODUCTS

Wheat Bran is the course outer covering of the wheat kernel as separated from cleaned and scoured wheat in the usual process of commercial milling.

HARD SPRING WHEAT PRODUCTS

Standard Middlings consists mostly of fine particles of bran, germ and very little of the fibrous offal obtained from the "tail of the mill." This product must be obtained in the usual commercial process of milling and shall not contain more than 9.5 per cent crude fiber.

Flour Middlings shall consist of standard middlings and red dog flour combined in the proportions obtained in the usual process of milling and shall not contain more than 6.0 per cent crude fiber.

Wheat Red Dog, a by-product obtained in the usual commercial process of flour milling, consists principally of aleurone with small quantities of flour and fine bran particles and shall not contain more than 4.0 per cent crude fiber.

Wheat Low Grade Feed Flour, a by-product obtained in the usual commercial process of flour milling, consists principally of flour with small quantities of aleurone and fine bran particles and shall not contain more than 1.5 per cent crude fiber.

Wheat Bran and Standard Middlings consists of the two commodities as defined above, mixed in the proportions obtained in the usual process of commercial milling.

Hard Wheat Mixed Feed (mill-run wheat feed) consists of pure wheat bran and flour middlings combined in the proportions obtained in the usual process of commercial milling. This product shall not contain more than 9.5 per cent crude fiber.

WINTER WHEAT PRODUCTS

Brown Shorts (Red Shorts) consists mostly of the fine particles of bran, germ and very little of the fibrous offal obtained from the "tail of the mill." This product must be obtained in the usual commercial process of milling and shall not contain more than 7.5 per cent crude fiber.

Gray Shorts (Gray Middlings or Total Shorts) consists of the fine particles of the outer bran, the inner bran or bee-wing bran, the germ and the offal or fibrous materials obtained from the "tail of the mill." This product must be obtained in the usual process of commercial milling and should not contain more than 6.0 per cent crude fiber.

White Shorts or White Middlings consists of a small portion of the fine bran particles and the germ and a large portion of the fibrous offal obtained from the "tail of the mill." This product must be obtained in the usual process of flour milling and shall not contain more than 3.5 per cent crude fiber.

Wheat Mixed Feed (Mill-run wheat feed) consists of pure wheat bran and the gray or total shorts combined in the proportions obtained in the usual process of commercial milling. This product shall not contain more than 8.5 per cent crude fiber.

Screenings consists of the smaller imperfect grains, weed seeds, and other foreign materials, having feeding value, separated in cleaning the grain.

Scourings consists of such portions of the cuticle, brush, white caps, dust, smut and other materials as are separated from the grain in the usual commercial process of scouring.

(NOTE) If to any of the wheat or rye by-product feeds there should be added screenings or scourings—as above defined, either ground or unground, bolted or unbolted, such brand shall be so registered, labeled and sold as clearly to indicate this fact. The word "Screenings" or "Scourings" as the case may be, shall appear as a part of the name or brand and shall be printed in the same size and face of type as the remainder of the brand name. When the word "Screenings" appears it is not necessary to show also on the labeling the word "Scourings."

MISCELLANEOUS PRODUCTS

Dried Beet Pulp is the dried residue from sugar beets which have been cleaned and freed from crowns, leaves and sand, and which have been extracted in the process of manufacturing sugar.

Dried Buttermilk Feed is the product resulting from the removal of water from clean, sound buttermilk derived from natural cream to which no foreign substances have been added, except such as are necessary and permitted in the manufacture of butter. It contains,

all tolerances being allowed for, not more than eight per cent (8.0%) of moisture and not more than thirteen per cent (13.0%) of mineral matter (ash).

Evaporated Buttermilk Feed, Concentrated Buttermilk Feed, Condensed Buttermilk Feed, is the product resulting from the removal of a considerable portion of water from clean, sound buttermilk derived from natural cream to which no foreign substances have been added excepting such as are permitted and necessary in the manufacture of butter. It contains, all tolerances being allowed for, not less than 27% of total solids, not less than 2% of butterfat, and not more than .14% ash for each per cent of solids. This definition does not prohibit the use of a distinctive trade name, provided it is followed by one of the names given.

Cocoanut Oil Meal or "Copra Oil Meal" is the ground residue from the extraction of part of the oil from the dried meat of the cocoanut.

Fish Meal is the clean, dried ground tissues of undecomposed fish, with or without the extraction of part of the oil.

Fish Residue Meal is the clean undecomposed residue from the manufacture of glue or other fishery products from non-oily fish.

Ivory Nut Meal is the ground waste material resulting from the manufacture of buttons and similar articles from the vegetable ivory nut.

Processed Garbage is composed of garbage collected sufficiently often so that harmful decomposition has not set in; screened, dried and separated from metal, crockery, glass and similar material. Its odor must not be suggestive of pronounced decomposition and it must contain less than 1 per cent of glass in fine pieces, none of which shows knife-like or needle-like particles. Provided further that the maximum percentage of glass be stated on the label.

Palm Kernel Oil Meal is the ground residue from the extraction of part of the oil by pressure or solvents from the kernel of the fruit of *Elaeis guineensis* or *Elaeis malanococca*.

TENTATIVE DEFINITIONS

Animal By-Products

1. **Blood Meal** is ground, dried blood.
2. **Blood Flour** is dried blood, prepared by special processes and reduced to a fine powder.
3. **Digester Tankage**, meat meal digester tankage, meat meal tankage, or feeding tankage is the residue from animal tissue exclusive of hoof, horn, manure and stomach contents, except in such traces as might occur unavoidably in good factory practice, especially prepared for feeding purposes by tanking under live steam or by dry rendering or a mixture of the products made suitable by drying

and grinding. When these products contain more bone than that amount equivalent to 22.0% of tricalcium phosphate ($\text{Ca}_3(\text{PO}_4)_2$) they shall be designated Digester Tankage with Bone, Meat and Bone Meal Digester Tankage, Meat and Bone Meal Tankage, or Feeding Tankage with Bone. If they bear a name descriptive of their kind, composition or origin they must correspond thereto.

4. **Meat Scrap** is the ground dry-rendered residue from animal tissues exclusive of hoof, horn, manure and stomach contents, except in such traces as might occur unavoidably in good factory practice. When this product contains more bone than that amount equivalent to 22% of tri-calcium phosphate ($\text{Ca}_3(\text{PO}_4)_2$) it shall be designated Meat and Bone Scraps. If they bear a name descriptive of their kind, composition or origin they must correspond thereto.

TABLE I.—Average Composition of the More Common Feeding Stuffs.

	POUNDS IN 100					
	Water	Ash	Protein	Fat	Carbohy- drates	
					Fiber	N. F. Extract
Alfalfa leaf meal	6.5	12.0	21.0	3.5	16.0	40.5
Alfalfa meal	8.8	9.0	14.3	2.0	30.1	35.8
Barley	9.3	2.7	11.5	2.1	4.6	69.8
Beet pulp, dried	8.2	3.5	8.9	0.9	18.9	59.6
Blood, dried	9.7	3.3	82.3	0.9	.....	3.8
Bone meal, raw	7.3	61.7	24.3	3.1	.....	3.6
Brewers' dried grains	8.2	3.8	23.1	6.4	15.0	43.5
Buckwheat	12.1	2.1	10.8	2.5	10.3	62.2
Buttermilk, dried	4.5	8.1	34.6	12.6	.....	50.9
Buttermilk, semi-solid	65.0	2.7	13.4	3.0	.....	15.9
Corn	10.8	1.5	9.5	4.1	2.0	71.7
Corn and cob meal	10.4	1.5	8.5	4.1	7.9	67.6
Crushed ear corn with husks	11.0	1.8	7.5	3.0	7.8	68.9
Corn chop	10.5	1.5	8.3	3.5	1.4	75.5
Corn feed meal	10.5	1.5	9.4	4.5	2.7	71.1
Corn gluten feed	8.7	2.1	25.4	3.8	7.1	52.9
Corn gluten meal	9.1	1.1	35.5	4.7	2.1	47.5
Cottonseed meal 43%	7.5	6.2	43.0	7.2	9.7	26.4
Cottonseed meal 41%	7.5	6.2	41.0	7.3	10.7	27.1
Cottonseed meal 38½%	7.5	6.4	38.5	7.7	13.4	26.3
Cottonseed feed 36%	7.5	6.6	36.0	7.4	15.3	26.6
Cottonseed feed 22%	8.3	4.9	22.0	6.3	21.4	34.6
Cowpeas (seed)	11.6	3.4	23.6	1.5	4.1	55.8
Distillers' dried grains (chiefly corn)	6.6	2.6	30.7	12.2	11.6	36.3
Flaxseed	9.2	4.3	22.6	33.7	7.1	23.2
Hominy meal, feed or chop	10.1	2.6	11.3	9.3	5.5	61.2
Kafir corn	11.8	1.7	11.1	3.0	2.3	70.1
Linseed oil meal (new pro- cess)	9.6	5.6	36.9	2.9	8.7	36.3
Linseed oil meal (old pro- cess) 34%	9.1	5.4	34.0	7.5	8.4	35.7
Malt sprouts	7.6	6.1	26.4	1.5	12.6	45.6
Meat scrap 50%	8.0	6.5	50.0	10.5	7.5	2.6
Meat and bone meal	7.0	35.4	45.0	4.1	8.5	.....
Millet seed	9.1	3.3	11.8	3.3	7.8	64.7
Molasses (beet)	22.0	7.0	9.0	.....	.....	62.0
Molasses (cane)	25.7	6.1	3.2	.....	.....	65.0
Oats	10.4	3.4	11.5	4.6	11.0	60.9
Oat kernels	6.9	2.2	14.3	8.1	1.4	67.1
Peanut oil meal	6.6	4.8	44.8	10.2	7.6	26.0
Rice bran	10.0	9.5	12.0	10.0	12.0	47.5
Rye	9.4	2.0	11.8	1.8	1.8	73.2
Sorghum grains	12.7	1.9	9.2	3.4	2.0	70.8
Soybeans (seed)	9.9	5.3	36.5	17.5	4.3	26.5

TABLE I.—Continued.

	POUNDS IN 100					
	Water	Ash	Protein	Fat	Carbohydrates	
					Fiber	N. F. Extract
Soybean meal 43% ..	10.5	4.9	43.0	6.6	5.3	29.5
Sunflower seed	6.9	3.1	16.1	24.7	27.9	21.3
Tankage 60%	7.9	15.3	60.0	7.0	1.4	6.8
Tankage 50%	8.3	21.8	50.0	11.7	1.5	6.8
Wheat	10.2	1.9	12.4	2.1	2.2	71.2
Wheat bran	10.1	6.3	15.4	4.7	9.1	54.4
Mixed wheat feed	10.1	5.2	16.2	4.4	8.3	56.9
Wheat middlings, brown	10.3	5.4	16.9	4.5	7.3	56.1
Wheat middlings, gray	10.5	4.4	16.7	4.6	5.8	58.4
Wheat flour middlings	10.7	3.7	17.8	5.0	4.0	58.1
Wheat flour, red dog	11.0	1.5	14.1	3.2	2.0	68.2
Wheat flour, patent	12.3	0.5	10.9	1.3	0.4	74.6
Roughages						
Alfalfa hay	8.6	8.6	14.9	2.3	28.3	37.3
Clover, red	12.9	7.1	12.8	3.1	25.5	38.7
Soybean hay	8.6	8.6	16.0	2.8	24.9	39.1
Timothy hay	11.6	4.9	6.2	2.5	29.8	45.0
Corn stover (ears removed) ..	9.4	5.8	5.9	1.6	30.7	46.6
Cowpea hay	9.9	11.9	19.3	2.6	22.5	34.0
Fillers						
Alfalfa stem meal	5.6	4.9	6.3	0.9	54.4	27.9
Buckwheat hulls	10.3	2.1	4.4	1.0	43.7	38.5
Corn bran	10.0	2.4	9.7	5.7	9.8	62.1
Corn cob	10.0	1.5	2.0	0.4	31.8	54.3
Cottonseed hulls	9.7	2.7	4.6	1.9	43.8	37.3
Flax screenings	8.8	8.2	15.4	11.8	15.5	40.5
*Grain screenings .....	.....	.....	.....	.....	.....	.....
Oat hulls and oat shorts	7.5	5.0	6.0	2.1	26.5	52.9
Oat hulls	6.8	6.0	4.0	1.7	29.2	52.3
Peanut hulls	9.1	5.5	7.3	2.6	56.6	18.9
Rice hulls	9.3	16.9	3.3	1.1	35.4	34.0
**Screenings refuse, floor sweepings, grain dust .....	.....	.....	.....	.....	.....	.....
Velvet bean hulls	13.2	6.1	11.6	1.9	24.5	42.7
Wheat chaff	14.4	7.2	4.2	1.4	28.0	44.8
Wheat screenings	10.2	3.9	13.3	4.1	7.4	61.1

*Varies in quality from fair to poor.

**Varies in quality from poor to worthless and even dangerous.

TABLE II.—Average Digestibility of the Nutrients in Common Feeding Stuff, Taken from "Feeds and Feeding," by Henry and Morrison. (This table is copyrighted and is quoted by permission of the publishers.)

FEEDING STUFF	Crude Protein %	Fat %	Carbohydrates	
			Fiber %	Nitro- gen-free Extract %
Alfalfa	71	38	43	72
Barley	78	78	56	92
Beet pulp, dried	52	.....	83	83
Blood, dried	84	.....	.....	.....
Bone meal, raw	92	97	.....	.....
Brewers' grain, dried	81	89	49	57
Buckwheat	75	100	24	76
Buttermilk, dried	85	49	.....	81
Clover, red	59	57	54	66
Corn, whole ground	74	93	57	94
Corn and cob meal	52	84	45	88
Corn gluten feed	85	85	76	88
Corn gluten meal	85	93	55	90
Corn stover	37	62	66	59
Cottonseed feed	58	90	45	61
Cottonseed meal, choice and prime	84	95	37	75
Cowpea seed	87	74	64	93
Cowpea hay	68	39	47	68
Distillers' dried grains	73	95	95	81
Flaxseed	91	86	60	55
Hominy feed or meal	66	91	76	90
Kafir corn	81	77	55	92
Linseed meal (new process)	86	95	73	87
Linseed meal (old process)	89	89	57	78
Malt sprouts	77	85	87	80
Meat scrap	93	98	.....	.....
Meat and bone meal	85	.....	.....	.....
Millet seed	59	80	41	84
Molasses, cane	32	.....	.....	90
Oats	78	87	35	81
Peanut cake from hulled nuts.....	90	90	9	84
Rice bran	65	77	25	79
Rye, ground	84	64	.....	92
Soybeans, ground	91	92	75	81
Soybean oil meal	92	68	99	100
Sunflower seed	84	82	.....	.....
Tankage (with swine)	71	100	.....	100
Wheat, ground	74	72	59	93
Wheat bran	78	68	31	72
Wheat mixed feed	77	87	36	76
Wheat middlings or shorts	88	86	36	88
Wheat red dog flour	80	70	60	83
Wheat flour, patent	74	69	.....	.....

TABLE II—Continued.

FEEDING STUFF	Crude Protein %	Fat %	Carbohydrates	
			Fiber %	Nitro- gen-free Extract %
Fillers				
†Alfalfa stems .....	.....	.....	.....	.....
Buckwheat hulls	9	10	.....	62
Corn bran	60	80	71	80
Corn cob	19	50	60	52
Cottonseed hulls	6	79	47	34
†Grain screenings .....	.....	.....	.....	.....
Oat hulls and oat middlings	75	78	42	46
Peanut hulls	6	80	.....	.....
Rice hulls	10	67	1	35
†Screenings refuse, floor sweep- ings, grain dust .....	.....	.....	.....	.....
Wheat chaff	26	43	39	33

†Low in digestibility.

TABLE III.—Average Digestible Nutrients of Feeding Stuffs.

FEEDING STUFF	POUNDS IN 100					
	Protein	Fat	Carbohydrates		Nutritive Ratio	Net energy per 100 lbs. for ruminants. Therms.
			Fiber	Nitrogen-free Extract		
Alfalfa leaf meal	17.3	3.0	10.0	25.9	1: 2.4	.....
Alfalfa meal	9.9	0.6	12.9	28.4	1: 4.3	34.2
Barley meal	10.1	1.5	3.4	64.0	1: 7.0	89.9
Barley feed	8.5	2.2	4.1	54.3	1: 7.4	.....
Blood, dried	59.0	.....	.....	3.5	1: 0.1	68.1
Brewers' dried grains	23.1	5.2	6.7	12.2	1: 1.8	53.4
Buckwheat	8.1	2.5	3.0	45.3	1: 6.6	59.7
Buckwheat feed	9.9	3.1	7.8	31.0	1: 4.6	.....
Buckwheat middlings	23.4	6.2	1.9	35.7	1: 2.0	72.2
Cocoanut meal	18.5	9.0	2.0	42.9	1: 3.5	83.5
Corn, ground	7.1	4.0	1.1	70.4	1:10.4	85.5
Corn bran	6.0	4.4	8.1	48.0	1:11.0	.....
Corn-and-cob meal	4.2	3.1	3.7	60.2	1:17.0	75.8
Cracked corn	7.3	3.6	1.0	69.0	1:11.0	89.2
Corn feed meal	7.0	3.7	1.1	67.4	1:11.0	85.2
Corn germ oil meal	16.5	10.1	5.6	37.8	1: 3.9	83.9
Corn gluten feed	21.2	3.0	5.4	46.6	1: 2.8	80.7
Corn gluten meal	30.2	3.7	1.0	43.2	1: 1.7	84.2
Cottonseed meal, choice	34.4	6.7	3.7	21.3	1: 1.2	93.4
Cottonseed meal, prime	32.3	6.7	4.4	22.5	1: 1.3	90.0
Cottonseed feed, 36%	30.3	6.2	5.1	22.0	1: 1.4	.....
Cottonseed hulls	0.3	1.6	17.3	16.4	1:13.3	9.9
Cowpea seed	18.0	1.1	2.6	51.1	1: 3.2	79.5
Flaxseed	20.6	29.0	4.3	13.0	1: 3.7	83.2
Hominy feed, meal or chops	6.9	6.8	4.8	57.0	1:11.1	88.8
Kaffir corn	5.2	1.3	1.1	35.4	1: 7.6	.....
Linseed meal, old process	30.3	6.7	4.2	28.6	1: 1.6	88.9
Linseed meal, new process	31.0	2.9	6.6	33.8	1: 1.5	85.1
Malt sprouts	21.0	4.5	10.1	31.8	1: 2.5	72.7
Meat scrap	48.8	7.3	.....	.....	1: 0.3	73.0
Millet	6.2	3.2	3.9	53.3	1:10.4	.....
Milo maize	6.3	2.5	2.7	59.0	1:10.7	.....
Molasses, cane	1.1	.....	.....	59.1	1:53.7	55.4
Oats	8.2	3.8	3.9	48.8	1: 7.3	67.6
Oat shorts and hulls (hulls 85%)	5.0	2.0	8.4	29.4	1: 8.5	.....
Peanut oil meal, 41%	36.9	6.7	0.4	17.5	1: 0.1	93.6
Peanut oil meal, 38½%	34.6	7.1	0.9	22.2	1: 1.1	.....
Peanut oil feed, 30%	21.0	5.4	2.6	14.6	1: 1.4	42.6
Rice bran	7.8	7.7	2.3	39.0	1: 7.5	45.3

TABLE III.—Continued.

FEEDING STUFF	POUNDS IN 100					
	Protein	Fat	Carbohydrates		Nutritive Ratio	Net energy per 100 lbs. for ruminants. Therms.
			Fiber	Nitrogen-free Extract		
Rice polish	8.0	7.0	0.5	56.3	1: 9.1	77.7
Rye	9.5	1.3	-----	60.7	1: 7.2	93.7
Rye mixed feed	11.7	4.2	-----	55.9	1: 5.4	-----
Rye middlings	12.6	3.1	-----	55.5	1: 4.5	-----
Soy-bean meal	40.0	4.0	4.9	22.4	1: 0.9	99.7
Sunflower seed	13.5	18.9	6.3	17.8	1: 4.9	92.5
Tankage, digester, 60%	42.6	9.2	-----	-----	1: 0.4	93.0
Tankage, digester, 50%	35.5	9.0	-----	-----	1: 0.4	73.0
Velvet-bean feed	14.9	3.8	13.0	34.5	1: 3.8	-----
Wheat	8.8	1.5	1.6	66.5	1: 7.8	91.8
Wheat bran	11.7	2.6	2.5	40.4	1: 4.0	53.0
Wheat middlings and shorts	14.5	3.9	1.8	51.8	1: 4.4	59.1
Wheat mixed feed	12.5	3.9	2.4	45.0	1: 4.2	-----
Wheat red dog	15.4	3.9	0.8	54.6	1: 4.2	75.0
Wheat screenings	3.9	1.9	-----	46.3	1: 6.1	-----
Hays						
Alfalfa hay	10.3	0.6	12.9	27.4	1: 4.3	34.2
Alfalfa stem meal	1.8	0.4	8.5	38.4	1: 26.6	-----
Clover hay (red)	7.6	1.8	13.8	25.4	1: 5.7	38.7
Cowpea hay	13.1	1.0	8.9	24.8	1: 2.7	-----
Soy-bean hay	11.7	1.2	17.0	25.0	1: 3.8	44.0
Timothy hay	3.0	1.3	15.0	27.9	1: 15.3	43.0

TONNAGE FOR 1927

In the following tabulation, the feeds sold in Kentucky during the year are grouped according to class, with tonnage computed from tax tags issued:

	Tons	Tons
Wheat Bran		9,705
Wheat Middlings, Shorts		22,310
Mixed Wheat Feed		26,455
Red Dog		875
Flour Middlings		450
Ground Wheat		50
Miscellaneous Wheat Feeds		4,235
Cracked Corn		18,642
Corn Feed Meal		2,925
Hominy Feed		4,480
Corn Bran		150
Crushed Ear Corn		450
Corn Gluten Feed		100
Corn Germ Meal		75
Mixed Feed (Wheat & Corn)		30,475
Dairy Feed:		
16½% Protein	17,605	
20% Protein	8,350	
24% Protein	15,135	
32% Protein	200	
34% Protein	100	
		41,390
Horse and Mule Feed		19,325
Poultry Grains:		
Scratch	27,237	
Chick	5,815	33,052
Pigeon Feed		725
Poultry Mash:		
Laying	7,712	
Growing	5,755	
Starting	3,240	
Fattening	4,125	
All-Mash	525	
		21,357
Hog Feed		4,750
Sheep Feed		200
Stock Feed		8,812

	Tons	Tons
Cottonseed Meal:		
41% Protein	9,750	
43% Protein	1,600	
		11,350
Tankage		3,825
Meat Scraps		1,525
Bone Meal		75
Alfalfa Meal		250
Alfalfa Leaf Meal		150
Brewers Grains		500
Linseed Oil Meal		1,350
Ground Oats		1,650
Oat Hulls		600
Ground Barley		125
Ground Rye		125
Rye Middlings		50
Palmo Middlings		525
Rice Bran		300
Dried Buttermilk		275
Semi-Solid Buttermilk		380
Dog Food		150
Calf Meal		205
Miscellaneous		600

SUMMARY OF RESULTS OF INSPECTION AND ANALYSIS.

For several years, instead of publishing the analytical results in detail, a summary only has been issued. This is because of the size and weight of the bulletin in its distribution thru the mails, when full details are printed.

In the summary, the names of the manufacturers whose feeds have been inspected and analyzed, are given in alphabetical order. The results are summarized without stating percentages found by analysis. If a feed was found to equal or exceed its guaranty, the term "equaled guaranty" is used. In the same manner, if a feed does not equal its guaranty, the deficiencies are stated as follows: "too low in prote'n," "two low in fat," "too high in fiber." If the ingredients are not as listed, the name or names of such ingredients as appear irregular are

stated "present" or "not present" or the feed is "adulterated" or "misbranded" as the case may be. Other brief statements of facts are used where necessary.

Investigations of the 1927 crops were made early in the fall and it was found that crops grown in some parts of Kentucky and other sections of the country, were deficient in protein. The fat and fiber content did not seem to be materially affected. The cause of the deficiency in protein was probably the lack of sufficient sunshine and an excess rainfall at the critical time in the plant life. The percentage of wheat samples found deficient in protein averaged about 20%, while the other grains and plants would run less. When the feeds from such crops appeared to be clean, clear and from sound grain, to which nothing had been added or taken away in their manufacture, the cause for the protein deficiency has been assigned to seasonal conditions over which no one has control and the results of analyses do not appear in this bulletin as being deficient.

Acme-Evans Co., Indianapolis, Ind. Inspection samples analyzed, 12.

Producer All-Mash Poultry Feed (With Dried Buttermilk), 1; equaled guaranty.

Acme Hominy Feed, 1; equaled guaranty.

Acme Feed, 2; 1 too low in protein and contained corn product though not listed.

Acme Farm Feed, 3; equaled guaranty.

Acme Horse & Mule Feed, 1; too low in protein.

Acme Dairy Feed (With Molasses), 1; equaled guaranty.

Acme Special Dairy Feed (With Molasses), 1; equaled guaranty.

D-Light-U Dairy Feed (With Molasses), 1; too low in protein.

Acme Stock Feed, 1; contained ground grain screenings though not listed.

The Acme Mills, Hopkinsville, Ky. Inspection samples analyzed, 3.

"Old Kentucky Home" Laying Mash, 1; equaled guaranty.

Butternut Dairy Feed, 1; too low in fat.

Supreme Dairy Feed, 1; too low in protein and fat and too high in fiber; contained alfalfa meal though not listed; excess of oat hulls present.

The William Addams Co., Cynthiana, Ky. Inspection samples analyzed, 2.

- Waco Laying Mash, 1; equaled guaranty.
Waco Pig Feed, 1; too low in protein.
- Jas. H. Albro & Co., Caneyville, Ky. Inspection sample of Mixed Wheat Feed & Screenings analyzed, 1; equaled guaranty.
- Alfocorn Milling Co., St. Louis, Mo. Inspection samples analyzed, 7.
Alfocorn Milk Maker, 2; equaled guaranty.
Full Pail Dairy Feed, 1; equaled guaranty.
High Flow 24% Dairy Feed, 1; contained linseed oil meal and corn gluten feed though not listed; no ground oats present.
Alfocorn Hog Fatner, 1; too low in protein and too high in fiber; contained ground oats though not listed.
Alfolas Mixing Meal, 1; equaled guaranty.
Diamond Sweet Dairy Feed, 1; contained wheat bran, brewers dried grains and ground grain screenings though not listed.
- The Allen & Wheeler Co., Troy, Ohio. Inspection samples analyzed, 6.
Trojan Middlings & Screenings, 1; too low in protein; corn feed meal added.
Trojan Flour Middlings & Screenings, 1; too low in protein and too high in fiber; contained corn meal.
Trojan Spring Middlings & Screenings, 1; equaled guaranty.
Trojan A-1 Farm Feed, 1; equaled guaranty.
Su-Kow Dairy Feed, 1; equaled guaranty.
Trojan I. X. L. Dairy Feed, 1; too low in protein; contained corn gluten feed though not listed; no malt present.
- American Linseed Co., New York, N. Y. Inspection sample of Alinco Old Process Linseed Meal 34% analyzed, 1; equaled guaranty.
- American Milling Co., Peoria, Ill. Inspection samples analyzed, 17.
Amco Egg Mash (With Meat Scraps), 2; too low in protein.
Amco Laying Mash (With Alfalfa Leaf Meal), 2; 1 too low in protein.
Amco Starting & Growing Mash (With Dried Buttermilk), 2; equaled guaranty.
Amco Horse Feed, 1; ingredients not in proportion as guaranteed.
Amco Ideal Horse & Mule Feed, 1; equaled guaranty.
Amco Hog Profit Feed, 1; too high in fiber, contained corn gluten feed though not listed.
Amco 41% Cottonseed Meal, 1; equaled guaranty.
Amco Ideal 16% Dairy Ration, 1; equaled guaranty.
Amco 16½% Sucrene Dairy Ration, 4; equaled guaranty.
Amco 24% Universal Dairy Ration, 1; equaled guaranty.
Amco 24% Batch Mix, 1; too low in protein.
- Anderson & Spilman, Danville, Ky. Inspection samples of Anderson & Spilman Feed analyzed, 2; 1 too low in protein.

Anheuser-Busch Co., St. Louis, Mo. Inspection sample of Dried Brewers Grains analyzed, 1; equaled guaranty.

Arcady Farms Milling Co., Chicago, Ill. Inspection samples analyzed, 8.

Arcady Besbet Laying Mash, 1; contained ground wheat screenings though not listed.

Arcady Hog Meal, 1; equaled guaranty.

Wonderfat Station Feed, 1; equaled guaranty.

Arcady Dairy Feed, 1; too high in fiber; no linseed oil meal present.

Milkers Ready Ration, 1; too low in protein; no linseed oil meal or corn feed meal present; contained oat hulls though not listed.

Wonder Dairy Ration, 1; too low in protein and fat; ingredients not as guaranteed—misbranded.

Arco Dairy Ration, 1; contained oat product though not listed.

Provo Dairy Feed, 1; too high in fiber; ingredients not as guaranteed—misbranded.

Archer-Daniels Midland Co., Minneapolis, Minn. Inspection samples of Pure Old Process Linseed Meal analyzed, 2; 1 too low in protein.

Arlington Roller Mills, Arlington, Ky. Inspection sample of Mixed Feed analyzed, 1; equaled guaranty.

Armour & Co., Chicago, Ill. Inspection sample of Armour's 60% Meat Meal analyzed, 1; equaled guaranty.

Aubrey & Co., Louisville, Ky. Inspection samples analyzed, 17.

Aubrey's Scratch Feed, 2; 1 no barley or oats present.

Supreme Laying Mash with Buttermilk, 1; too high in fiber.

Hominy Feed, 1; equaled guaranty.

Aubrey's Wheat Bran & Screenings, 1; equaled guaranty.

Red "A" Wheat Feed & Screenings, 2; equaled guaranty.

Blackhawk Feed & Screenings, 2; equaled guaranty.

Blackhawk Mixed Wheat Feed & Screenings, 1; too low in protein.

Mixed Wheat Feed & Screenings, 1; equaled guaranty.

Supreme 24% Dairy Feed, 1; equaled guaranty.

Monarch 16½% Protein Feed, 3; 2 too low in protein; 1 contained corn feed meal though not listed.

Rice Bran, 1; equaled guaranty.

Aubrey's 41% Cottonseed Meal, 1; equaled guaranty.

Auburn Mills, Auburn, Ky. Inspection sample of Mill Run Feed analyzed, 1; equaled guaranty.

- Aunt Jemima Mills Branch, Quaker Oats Co., St. Joseph, Mo. Inspection sample of Aunt Jemima Gray Wheat Shorts analyzed, 1; equaled guaranty.
- Aviston Milling Co., Aviston, Ill. Inspection samples analyzed, 3.
Rich As Gold, 1; too low in protein and fat.
Results Mixed Wheat Feed & Screenings, 1; equaled guaranty.
Corn Feed Meal, 1; equaled guaranty.
- J. J. Badenoch Co., Chicago, Ill. Inspection samples analyzed, 8.
Sunflower Egg Mash, 1; only trace of corn gluten feed present.
Jay Bee Dairy Feed, 3; 2 too low in protein; 1 only trace of barley, oats and linseed oil meal present.
Milky Way Dairy Feed, 2; 1 too low in protein and only trace of corn feed meal present.
Sweet Honey Bee Dairy Feed, 2; 1 too high in fiber.
- J. H. Baker & Co., Central City, Ky. Inspection sample of Mixed Wheat Feed analyzed, 1; equaled guaranty.
- Ballard & Ballard Co., Louisville, Ky. Inspection samples analyzed, 8.
Ballard's Insurance Laying Mash, 1; equaled guaranty.
Insurance College Formula Egg Mash, 1; equaled guaranty.
Insurance All-Mash Starting & Growing Feed, 1; equaled guaranty.
Ballard's 24% Sweet Dairy Feed, 1; equaled guaranty.
Red Mule Feed, 1; equaled guaranty.
Kentucky Farm Feed & Screenings, 2; 1 too low in protein.
Ballard's Mixed Wheat Feed & Screenings, 1; equaled guaranty.
- Bardstown Milling Co., Bardstown, Ky. Inspection samples analyzed, 2.
Royal Dairy Feed, 1; too low in protein and fat.
Royal Pig Feed, 1; equaled guaranty.
- J. H. Baughman & Co., Stanford, Ky. Inspection samples of Mixed Mill Feed analyzed, 2; equaled guaranty.
- Bernet, Craft & Kauffman Milling Co., Mt. Carmel, Ill. Inspection samples analyzed, 2.
Middlings, 1; equaled guaranty.
Wheat Bran & Screenings, 1; equaled guaranty.
- Big Diamond Mills Co., Minneapolis, Minn. Inspection samples of Big Diamond Wheat Middlings & Screenings analyzed, 2; 1 too high in fiber.
- W. C. Binns, Herndon, Ky. Inspection sample of Eclipse Hog Feed analyzed, 1; equaled guaranty.
- Bisbee Linseed Co., Chicago Hts., Ill. Inspection samples of "Bisbee" 34 per cent analyzed, 2; 1 too low in protein.
- Blish Milling Co., Seymour, Ind. Inspection sample of Bull's Eye Mixed Wheat Feed analyzed, 1; equaled guaranty.

Blue Grass-Elmendorf Grain Corporation, Lexington, Ky. Inspection samples analyzed, 7.

"Blue-Elm" Egg Maker Mash, 1; too low in protein and fat and too high in fiber.

"Blue-Elm" Growing Mash, 1; too low in fat.

"Blue-Elm" Mixed Wheat Feed & Screenings, 1; too high in fiber.

"Blue-Elm" Peerless Cow Feed, 4; 1 too low in protein; 2 too low in fat; 1 too high in fiber.

Bowling Green Milling Co., Bowling Green, Ky. Inspection sample of Mixed Feed analyzed, 1; too low in protein; contained excess of corn bran.

F. W. Brode Corporation, Memphis, Tenn. Inspection sample of Owl Brand 41% Prime Cottonseed Meal analyzed, 2; equaled guaranty.

Chas. Broeker & Co., Owensboro, Ky. Inspection sample of Hominy Feed analyzed, 1; equaled guaranty.

The Buckeye Cotton Oil Co., Cincinnati, O. Inspection sample of 41% Protein Cottonseed Meal analyzed, 1; equaled guaranty.

Buhner Fertilizer Co., Seymour, Ind. Inspection sample of Buhner's King Sixty Tankage analyzed, 1; equaled guaranty.

Burnside Roller Mills, Burnside, Ky. Inspection sample of Mixed Feed analyzed, 1; too low in protein.

Cadick Milling Co., Grandview, Ind. Inspection sample of Mixed Wheat Feed analyzed, 1; equaled guaranty.

Cameron's Mill, Carrollton, Ky. Inspection sample of Cameron's Feedstuff analyzed, 1; too low in protein and too high in fiber.

Carlisle Mill & Supply Co., Carlisle, Ky. Inspection sample of Old Kentucky Mill Feed analyzed, 1; contained ground wheat screenings though not listed.

J. M. Cash & Son, Fancy Farm, Ky. Inspection samples of Crushed Ear Corn & Shuck analyzed, 1; equaled guaranty.

Cecilian Milling Co., Cecilia, Ky. Inspection samples analyzed, 13.

Purity Mixed Feed, 7; contained rice bran though not listed—misbranded; 4 too low in protein; 2 no ground oats present.

Flour Middlings, 6; 5 too low in protein; 2 too high in fiber; 2 contained corn product; 1 contained rice bran.

The Chapman-Doake Co., Decatur, Ill. Inspection sample of Perfect Egg Mash analyzed, 1; too low in protein; ingredients not as guaranteed—misbranded.

Charleston Milling & Produce Co., Charleston, W. Va. Inspection sample of Blue Bar White Feed analyzed, 1; equaled guaranty.

The Cincinnati Grain & Hay Co., Cincinnati, O. Inspection samples analyzed 5.

"No Better" Dry Egg Mash, 1; too low in protein and too high in fiber.

- "No Better" Horse & Mule Feed, 1; too low in protein.
"No Better" Sweet Dairy Feed, 1; equaled guaranty.
Earley By-Product Feed, 2; equaled guaranty.
- Citizens Roller Mills, Somerset, Ky. Inspection sample of Mixed Feed analyzed, 1; too low in fat.
- Clarkson Milling Co., Clarkson, Ky. Inspection samples analyzed, 2.
Wheat Bran, 1; too low in protein.
Wheat Shorts, 1; too low in protein—sample largely wheat flour.
- Climax Roller Mills, S. M. Long & Sons, Prop., Shelbyville, Ky. Inspection sample of "Climax" Shorts analyzed, 1; equaled guaranty.
- H. C. Cole Milling Co., Chester, Ill. Inspection sample of Soft Wheat Bran analyzed, 1; equaled guaranty.
- Clell Coleman & Son, Burgin, Ky. Inspection sample of Mixed Feed analyzed, 1; equaled guaranty.
- The G. E. Conkey Co., Cleveland, O. Inspection sample of Red Seal Dairy Ration analyzed, 1; equaled guaranty.
- The Corno Mills Co., E. St. Louis, Ill. Inspection samples analyzed, 21.
Corno Chick Feed, 1; equaled guaranty.
Corno Laying Mash, 3; 1 too low in fat and no fish meal or hominy feed present.
Corno Starting Mash, 1; equaled guaranty.
Corno Growing Mash, 1; too low in protein.
Corno Premium Feed, 1; equaled guaranty.
Corno Sweet Feed, 1; too low in protein.
Corno Hog Feed, 1; equaled guaranty.
Corno Dairy Feed, 5; 1 no hominy feed present.
Nutro Hen Feed, 1; equaled guaranty.
Nutro Sweet Feed, 2; excess of oat by-products present; 1 too low in protein and contained cottonseed meal though not listed.
Nutro Dairy Feed, 4; 1 too low in protein and fat and too high in fiber, contained excess of oat by-products; 2 contained ground grain screenings though not listed.
- Crescent Milling Co., Cynthiana, Ky. Inspection sample of Crescent Mixed Feed analyzed, 1; equaled guaranty.
- Crescent Roller Mills, Taylorsville, Ky. Inspection samples analyzed, 2.
Crescent Laying Mash, 1; too low in protein.
Shipstuff, 1; too low in protein.
- Crown Jewel Milling Co., Cynthiana, Ky. Inspection sample of Mixed Feed analyzed, 1; too low in protein.
- Dairymen's Feed & Supply Co., Mayfield, Ky. Inspection samples of Sweet Sixteen Dairy Feed analyzed, 2; 1 too high in fiber; 1 contained ground grain screenings though not listed.

- S. P. Davis, Little Rock, Ark. Inspection sample of "Goodluck Brand" 41% Cottonseed Meal analyzed, 1; equaled guaranty.
- Dixie Mills Co., E. St. Louis, Ill. Inspection samples analyzed, 2.
Dixie Chicken Fat, 1; equaled guaranty.
Dixie Cow Feed, 1; equaled guaranty.
- The Dorsel Co., Newport, Ky. Inspection sample of Dorsel's Middlings analyzed, 1; too low in protein and fat.
- Dunlop Milling Co., Clarksville, Tenn. Inspection sample of Pure Wheat Middlings analyzed, 1; too low in protein and too high in fiber.
- The Early & Daniel Co., Cincinnati, O. Inspection samples analyzed, 18.
Tuxedo Egg Mash, 2; too low in protein; contained molasses though not listed.
Tuxedo Egg Mash with Buttermilk & Cod Liver Oil, 1; too low in protein and too high in fiber; contained molasses though not listed.
Tuxedo Egg Mash (Ohio Formula), 1; equaled guaranty.
Tuxedo Buttermilk Starting & Growing Mash, 1; too low in protein.
Tuxedo All-Mash, 1; equaled guaranty.
Corn Feed Meal, 1; equaled guaranty.
Hominy Meal, 1; equaled guaranty.
Alfalfa Meal, 1; too low in protein.
Old Process 32% Oil Meal, 1; equaled guaranty.
Rex Dairy, 1; excess of screenings present.
Tuxedo Dairy, 1; too low in protein.
Cerealia Sweets, 1; equaled guaranty.
Miami Dairy Feed, 3; equaled guaranty.
Tuxedo Hog Ration, 2; 1 no ground barley present.
- Eagle Roller Mills, Lawrenceburg, Ky. Inspection samples of Mixed Feed analyzed, 2; too low in protein.
- East St. Louis Cotton Oil Co., National Stock Yards, Ill. Inspection sample of "Illinois Brand" 41% Cottonseed Meal analyzed, 1; too low in protein.
- Elkhorn Roller Mills, Elkhorn, Ky. Inspection sample of Mixed Wheat Feed analyzed, 1; equaled guaranty.
- Ellis & Wyatt, Russellville, Ky. Inspection sample of Mixed Feed analyzed, 1; equaled guaranty.
- Eubank Milling & Feed Co., Eubank, Ky. Inspection sample of Mixed Wheat Feed analyzed, 1; too low in protein and fat; contained wheat flour and unground wheat screenings though not listed.
- Exchange Milling Co., Sturgis, Ky. Inspection sample of Mixed Brans & Screenings analyzed, 1; too low in protein.

- Falls City Ice & Beverage Co., Louisville, Ky. Inspection sample of
Brewers Dried Grains analyzed, 1; equaled guaranty.
- Farmers Union Mill, Versailles, Ky. Inspection sample of Mill Feed
analyzed, 1; too low in protein.
- J. H. Fedders & Sons, Covington, Ky. Inspection samples analyzed,
3.
Hominy Feed, 1; too low in protein and fat.
Mixed Wheat Feed & Screenings, 2; 1 too low in protein.
- Ferncliff Feed & Grain Co., Louisville, Ky. Inspection samples ana-
lyzed, 12.
P. D. Q. Scratch Feed, 2; only trace of oats present.
P. D. Q. Egg Mash, 1; too high in fiber.
Cracker Jack Horse & Mule Feed, 1; equaled guaranty.
Cracker Jack 24% Sweet Dairy Ration, 1; equaled guaranty.
Butternut Dairy Feed, 1; contained linseed meal though not listed.
"Sweet Sixteen" Dairy Feed, 2; 1 too high in fiber.
Cracker Jack Hog Special Meal, 1; too high in fiber; contained
alfalfa meal though not listed.
P. D. Q. Special Feed, 1; contained wheat product though not
listed.
P. D. Q. Mill Feed, 2; equaled guaranty.
- Henry Fischer Packing Co., Louisville, Ky. Inspection sample of
Eclipse 40% Tankage analyzed, 1; too low in protein and fat
and too high in fiber—much inferior to guaranty.
- Henry Fruechtenicht, Louisville, Ky. Inspection samples analyzed, 4.
Blue Grass Poultry Mash, 1; too high in fiber; contained oat pro-
duct though not listed.
Ground Oats, 1; too high in fiber.
Arrow Dairy Feed, 1; equaled guaranty.
Choice 41% Cottonseed Meal, 1; equaled guaranty.
- Garland Milling Co., Greensburg, Ind. Inspection samples analyzed,
3.
Garland Mixed Wheat Feed & Screenings, 1; equaled guaranty.
"Blue Bell" Fine Wheat Feed & Screenings, 2; equaled guaranty.
- Garrard Mills, Lancaster, Ky. Inspection samples of Glen Lily Mixed
Feed analyzed, 2; 1 too low in protein.
- Glasgow Milling Co., Glasgow, Ky. Inspection sample of Mixed Feed
analyzed, 1; too low in protein.
- Glass Milling Co., Wilmore, Ky. Inspection sample of Glass Hi-Grade
Feed analyzed, 1; equaled guaranty.
- Edw. F. Goeke Sons, Evansville, Ind. Inspection samples analyzed, 2.
Big-Gee Wheat Shorts & Screenings, 1; too low in protein and fat.
Big Gee Hog Feed, 1; contained ground oats though not listed.

- Goff Milling Co., Hiseville, Ky. Inspection sample of Mixed Wheat Feed & Screenings analyzed, 1; too low in protein; contained corn meal.
- F. H. Gordon, Richmond, Ky. Inspection sample of Gordon's Dairy Ration analyzed, 1; contained linseed meal though not listed.
- Graham & Neel, Kevil, Ky. Inspection sample of Crushed Ear Corn & Shuck analyzed, 1; equaled guaranty.
- Greendale Mills, Lawrenceburg, Ind. Inspection samples analyzed, 5.
Greendale Scratch Feed "B", 1; only trace of buckwheat present.
Greendale Egg Mash with Dried Buttermilk, 1; too low in protein and too high in fiber; contained corn gluten feed though not listed; no soybean meal present.
Greendale Horse Feed, 1; too low in protein.
Greendale 16% Dairy Feed, 1; only trace of linseed oil meal present.
Greendale 24% Dairy Feed, 1; too low in protein; no linseed meal present.
- Green River Milling Co., Greensburg, Ky. Inspection sample of Mixed Feed analyzed, 1; too low in protein.
- Green River Milling Co., S. Carrollton, Ky. Inspection sample of Green River Feed analyzed, 1; too low in protein.
- Greenup Milling Co., Greenup, Ky. Inspection sample of Standard Feed analyzed, 1; equaled guaranty.
- Gwinn Bros. & Co., Huntington, W. Va. Inspection samples analyzed, 3.
Corn Feed Meal, 1; too low in protein and fat.
Fancy White Wheat & Rye Middlings & Screenings, 1; too low in protein and fat; contained wheat flour.
Make Milk Dairy Feed, 1; contained excess of oat by-products; no molasses present.
- Hales & Hunter Co., Chicago, Ill. Inspection samples analyzed, 3.
Gold Flake Dairy Feed, 2; 1 contained corn feed meal though not listed; 1 only small amount of corn gluten feed and linseed meal present, contained excess of clipped oat by-product and grain screenings.
Red Comb Egg Mash, 1; too low in protein.
- Harlan Milling Co., Bardwell, Ky. Inspection sample of Harlan's Wheat Shorts & Screenings analyzed, 1; equaled guaranty.
- The P. H. Harsha Milling Co., Portsmouth, O. Inspection sample of Harsha's Middlings & Screenings analyzed, 1; equaled guaranty.
- Haydon Mill & Grain Co., Springfield, Ky. Inspection sample of Economy Hen Mash analyzed, 1; much too low in protein and too high in fiber.

The Hermitage Mills, Nashville, Tenn. Inspection sample of Best Yet Dairy Feed analyzed, 1; too low in protein; contained malt sprouts though not listed.

Hood Feed Co., Chattanooga, Tenn. Inspection samples analyzed, 7. "Red Circle Brand" Fine Feed, 2; 1 below guaranty in every respect—misbranded; 1 too high in fiber and contained excess oat hulls.

Hood's Special Fine Feed, 5; much too low in protein and too high in fiber; below guaranty in every respect—misbranded.

Hooper & Barriger, Lowes, Ky. Inspection sample of Crushed Ear Corn & Shuck analyzed, 1; equaled guaranty.

Hope Milling Co., White Plains, Ky. Inspection sample of Jersey Mixed Feed analyzed, 1; too low in protein and fat.

Hopkinsville Milling Co., Hopkinsville, Ky. Inspection sample of Middlings & Screenings analyzed, 1; too high in fiber.

Horse Cave Mills, Horse Cave, Ky. Inspection sample of Superior Mixed Feed analyzed, 1; too low in protein; contained hominy feed though not listed.

Humphreys-Godwin Co., Memphis, Tenn. Inspection samples analyzed, 5.

"Dixie Brand" 41% Cottonseed Meal, 4; 1 too low in protein.

"Bull Brand" 43% Cottonseed Meal, 1; equaled guaranty.

Ideal Roller Mills, B. F. Arnold, Prop., Falmouth, Ky. Inspection sample of Mixed Wheat Feed analyzed, 1; too low in protein; corn feed meal present.

Igleheart Bros., Evansville, Ind. Inspection samples of Pure Wheat Shorts & Screenings analyzed, 3; too low in fat; 2 too low in protein.

J. F. Imbs Milling Co., Belleville, Ill. Inspection sample of Charm Pure Wheat Mixed Feed analyzed, 1; equaled guaranty.

Imperial Mills Co., Cambridge City, Ind. Inspection samples analyzed, 2.

Imperial Mixed Wheat Feed, 1; much too low in protein and fat; adulterated with corn product and screenings.

Farmer's Choice Chop Feed, 1; adulterated with cob meal.

International Sugar Feed No. 2 Co., Memphis, Tenn. Inspection samples analyzed, 8.

International Jewel Egg Mash (With Buttermilk), 1; too low in fat; contained wheat bran and ground oats though not listed.

International Makmeat Hog Feed, 2; equaled guaranty.

International Ringleader Horse & Mule Feed, 1; contained ground grain screenings with large per cent of weed seeds though not listed.

- Sweet Wisconsin Dairy Feed, 1; equaled guaranty.
International Special Dairy Feed, 2; equaled guaranty.
International Ready Ration Dairy Feed, 1; equaled guaranty.
- Jellico Grocery Co., Corbin Ky. Inspection sample of Daisy Soft Wheat Middlings & Screenings analyzed, 1; equaled guaranty.
- Jenkins Feed Co., Bowling Green, Ky. Inspection samples analyzed, 2.
Crushed Ear Corn & Shuck, 1; equaled guaranty.
Big Four Dairy Feed, 1; contained barley product, corn cobs and oat product with hulls though not listed—misbranded.
- The Joslin-Schmidt Co., Cincinnati, O. Inspection samples analyzed, 2
Abattoir Brand Regular Meat Scraps 50%, 1; equaled guaranty.
Abattoir Brand 60% Digester Tankage, 1; equaled guaranty.
- The E. Kahn's Sons Co., Cincinnati, O. Inspection sample of Kahn's Diamond K. 60% Digester Tankage analyzed, 1; equaled guaranty.
- Keister Milling Co., Huntington, W. Va. Inspection samples analyzed, 10.
Cracked Corn, 2; 1 too low in fat.
Lotus Egg Mash, 1; equaled guaranty.
Lotus Wheat & Rye Middlings, 2; too high in fiber; 1 contained corn meal; 1 contained ground wheat screenings though not listed.
Fancy White Middlings, 2; 1 too low in protein and fat and too high in fiber.
W. Va. Farm Feed, 1; too high in fiber; contained ground oats though not listed.
Keister's Stock Feed, 1; too low in protein.
Lotus Dairy Feed, 1; much too low in protein.
- George Keller, Newport, Ky. Inspection samples analyzed, 4.
Wheat Bran, 1; equaled guaranty.
Wheat Middlings & Screenings, 1; too low in protein.
Ground Oats, 2; equaled guaranty.
- The Kentucky Chemical Manufacturing Co., Covington, Ky. Inspection sample of K-C Special 50% Meat Scraps analyzed, 1; too low in protein.
- Kentucky Feed & Grain Co., Louisville, Ky. Inspection samples analyzed, 32.
King Tut Scratch Feed, 1; too low in protein; ingredients not as guaranteed—misbranded.
Premo Baby Chick Feed, 1; below guaranty in protein; no kaffir corn present.
Premo Chick Starter, 1; too low in fat and too high in fiber.
Premo Laying Mash, 2; too high in fiber; 1 too low in protein; 1 too low in fat.

Kentucky Star Laying Mash, 2; 1 too low in protein and too high in fiber.

Corn Feed Meal, 1; too low in protein.

Success Wheat Bran & Screenings, 2; too high in fiber.

Kentucky Star Horse & Mule Feed, 1; too low in protein; contained ground screenings though not listed; no oat by-product present.

Derby Horse & Mule Feed, 1; only trace of wheat bran present.

Urma Horse & Mule Feed, 1; equaled guaranty.

Success Horse & Mule Feed, 1; equaled guaranty.

Premo Dairy Feed, 1; equaled guaranty.

Sunnyland Dairy Feed, 1; too high in fiber; excess of ground grain screenings present.

Marshall's 24% Dairy Feed, 4; 1 too low in protein; 2 no wheat middlings or rice bran present; 1 no wheat bran present.

Kentucky Star Dairy Feed, 6; 1 too low in protein; 2 too high in fiber; 2 no rice bran present; 3 contained excess of ground grain screenings; 1 contained corn gluten feed though not listed; 1 no wheat bran and only small amount of corn feed meal present.

Premo Hog Feed, 3; 2 too low in protein; 1 too high in fiber.

Marshall's Sheep Feed, 1; equaled guaranty.

Alfalfa Meal, Cane Molasses, Oat Middlings & Oat Hulls, 2; 1 contained ground grain screenings instead of oat by-products—misbranded; 1 contained whole oats though not listed.

Kevil Corn Mill, Kevil, Ky. Inspection sample of Crushed Ear Corn & Shuck analyzed, 1; equaled guaranty.

R. U. Kevil & Sons, Princeton, Ky. Inspection sample of Corn Bran analyzed, 1; equaled guaranty.

Burg Kinner, Greenup, Ky. Inspection sample of Standard Feed & Screenings analyzed, 1; contained ground weed seeds and oat hulls.

Chas. A. Krause Milling Co., Milwaukee, Wis. Inspection samples analyzed, 2.

Kookoo Baby Chick Starter Mash, 1; too high in fiber; no bone meal or calcium carbonate present.

Amerikorn Dairy Ration, 1; no calcium carbonate or bone meal present.

Kuttawa Milling Co., Kuttawa, Ky. Inspection sample of Wheat Screenings analyzed, 1; equaled guaranty.

The Ladish Co., Milwaukee, Wis. Inspection sample of Acto 16½% Sweet Dairy Feed analyzed, 1; too high in fiber; excess of oat products present; no calcium carbonate or salt present.

- The Lamar Alfalfa Milling Co., Lamar, Colo. Inspection samples analyzed, 2.
Alfalfa Meal, 1; equaled guaranty.
Alfalfa Leaf Meal, 1; too low in protein.
- Lambert Milling Co., Kenova, W. Va. Inspection samples analyzed, 2.
Justrite Feed, 1; equaled guaranty.
Lambert's No. 1 Feed, 1; equaled guaranty.
- Lancaster Milling Co., Lancaster, Ky. Inspection samples of White Swan Feed analyzed, 2; too low in protein; excess of corn by-product present.
- Lane Lumber & Milling Co., Inc., Rowletts, Ky. Inspection sample of Mill Feed analyzed, 1; equaled guaranty.
- The Larrowe Milling Co., Detroit, Mich. Inspection samples analyzed, 4.
Larro Egg Mash, 1; equaled guaranty.
Dried Beet Pulp, 1; equaled guaranty.
Larro, 2; equaled guaranty.
- Lawrenceburg Roller Mills Co., Lawrenceburg, Ind. Inspection samples of "Golden Bull" Wheat Middlings & Screenings analyzed, 2; equaled guaranty.
- Lexington Roller Mills Co., Lexington, Ky. Inspection samples analyzed, 11.
Hen Fruit Baby Chick Feed, 1; equaled guaranty
Hominy Feed, 1; too low in protein and too high in fiber; contained excess of ground corn bran.
"Thoroughbred" Cow Feed, 2; too low in protein and fat.
"Thoroughbred" Dairy Feed, 1; equaled guaranty.
"Thoroughbred" Feed, 6; 2 too low in protein.
- Lincoln Milling Co., Crab Orchard, Ky. Inspection sample of White Gold Mixed Feed analyzed, 1; no ground corn present.
- Lookout Oil & Refining Co., Chattanooga, Tenn. Inspection samples of 41% Cottonseed Meal analyzed, 2; 1 too low in protein.
- Loudonville Milling Co., Loudonville, O. Inspection samples of Winter Wheat Middlings analyzed, 3; 1 too low in protein; 1 contained ground wheat screenings though not listed.
- Louisa Supply Co., Louisa, Ky. Inspection samples analyzed, 2.
Louisa Mill Feed, 1; too low in fat.
Big Sandy Dairy Feed, 1; equaled guaranty.
- Louisville Cereal Mill Co., Louisville, Ky. Inspection sample analyzed, 2.
Nonesuch Feed, 1; equaled guaranty.
Nonesuch Hominy Feed, 1; too low in protein.

Louisville Cotton Oil Mill, Louisville, Ky. Inspection samples analyzed, 8.

"Eagle Brand" 41% Choice Cottonseed Meal, 6; 1 too low in protein.

43% Cottonseed Meal, 2; too low in protein.

Louisville Feed Mills, Louisville, Ky. Inspection samples analyzed, 4.

Aetna Scratch Feed, 1; less than 3% each of oats, barley and cane seed present.

Lincoln Horse & Mule Feed, 1; no oat by-products present.

Lincoln Dairy Feed, 2; 1 too low in protein and too high in fiber.

Louisville Milling Co., Louisville, Ky. Inspection samples analyzed, 3.

Sonny South Wheat Shorts & Screenings, 2; 1 too low in protein and too high in fiber—misbranded.

Sonny South Farm Feed, 1; equaled guaranty.

Louisville Provision Co., Louisville, Ky. Inspection samples of Loupro 50% Digester Feeding Tankage analyzed, 2; 1 too low in protein.

L. B. Lovitt & Co., Memphis, Tenn. Inspection samples analyzed, 2.

"Lovit Brand" 41% Cottonseed Meal, 1; too low in protein.

"Thirty-Six Brand" Cotton Seed Feed, 1; equaled guaranty.

Mann Bros. Co., Buffalo, N. Y. Inspection sample of 32% Protein Pure Old Process Linseed Oil Meal analyzed, 1; equaled guaranty.

Marianna Sales Co., Memphis, Tenn. Inspection samples of "White Mule Brand" 41% Cottonseed Meal analyzed, 3; 1 too low in protein.

Marion County Roller Mills, Lebanon, Ky. Inspection sample of Mixed Feed analyzed, 1; too low in protein and fat.

Mayfield Milling & Grocery Co., Mayfield, Ky. Inspection samples analyzed, 2.

Mixed Feed, 1; equaled guaranty.

Wheat Shorts, 1; too low in protein and too high in fiber.

Mayhew Feed Co., Franklin, Ky. Inspection samples analyzed, 2.

Just Right Egg Mash No. 1, 1; too high in fiber; ingredients not as guaranteed.

Just Right Chick Starter No. 1, 1; too high in fiber.

Gentry McCauley, Versailles, Ky. Inspection samples of "Pleez-U"

Dairy Feed Analyzed, 2; too low in protein and fat; 1 no brewers dried grains present; 1 contained alfalfa meal and molasses though not listed.

Memphis Cottonseed Products Co., Memphis, Tenn. Inspection samples analyzed, 2.

Durham 41%, 1; too low in protein and too high in fiber.

Durham 43%, 1; equaled guaranty.

Metzger Bros., Paducah, Ky. Inspection sample of 45% Tankage analyzed, 1; much inferior to guaranty in protein.

- Middlesboro Milling Co., Middlesboro, Ky. Inspection samples of Hard to Beat Mixed Feed analyzed, 1; equaled guaranty.
- Milroy Milling Co., Milroy, Ind. Inspection samples analyzed, 6.
Yellow Diamond Cracked Corn, 1; too low in protein.
Blue Diamond Middlings & Screenings, 1; equaled guaranty.
Red Diamond Feed, 4; 2 too low in fat.
- Minneapolis Milling Co., Minneapolis, Minn. Inspection sample of Minneapolis Milling Co.'s Feed analyzed, 1; too high in fiber and contained ground weed seeds.
- Model Roller Milling Co., Smith's Grove, Ky. Inspection sample of Mixed Feed analyzed, 1; equaled guaranty.
- Moore Flour & Feed Co., Louisa, Ky. Inspection samples analyzed, 4.
Louisa Dairy Feed, 2; 1 too low in protein; 1 ingredients not as guaranteed.
Big Sandy Dairy Feed, 1; too low in protein; contained alfalfa meal though not listed.
Louisa Farm Feed, 1; too high in fiber; contained excess of oat by-products.
- Morganfield Roller Mills, Morganfield, Ky. Inspection sample of "White Rose" Mixed Feed analyzed, 1; much too low in protein.
- Morrison Milling Co., Glasgow, Ky. Inspection sample of Mixed Feed analyzed, 1; equaled guaranty.
- Cletus Moss, Kirbyton, Ky. Inspection sample of Corn Chop analyzed, 1; equaled guaranty.
- Mountain City Mill Co., Chattanooga, Tenn. Inspection samples of Blue Stock Fine Feed analyzed, 2; too low in protein; 1 contained weed seeds and ground oat hulls though not listed.
- Newsome Feed & Grain Co., Pittsburg, Pa. Inspection sample of Palmo Midds analyzed, 1; too low in protein and fat.
- Nicholson Mills, Henderson, Ky. Inspection samples analyzed, 2.
Famous Pig Mash, 1; equaled guaranty.
Vita-Pure 16% Dairy Feed, 1; equaled guaranty.
- Noblesville Milling Co., Noblesville, Ind. Inspection sample of N. M. Co.'s Mixed Feed & Screenings analyzed, 1; equaled guaranty.
- Northern Cereal Co., Lockport, Ill. Inspection sample of Oat Groats analyzed, 1; equaled guaranty.
- W. C. Nothern, Memphis, Tenn. Inspection sample of Bee Brand 41% Cottonseed Meal analyzed, 1; too low in protein.
- Nowak Milling Corporation, Hammond, Ind. Inspection samples analyzed, 7.
Marathon Horse Feed, 1; equaled guaranty.
Domino 16% Union Dairy Feed, 1; equaled guaranty.
Domino 24½% Dairy Feed, 1; equaled guaranty.

- Domino Butterine Dairy Feed, 2; equaled guaranty.
Fidelity Stock Feed, 1; only trace of wheat middlings present.
Domino 32% Protein Mixing Dairy Feed, 1; equaled guaranty.
- Oakland Milling Co., Oakland, Ky. Inspection samples analyzed, 2.
Corn Chop, 1; equaled guaranty.
Mixed Wheat Feed & Screenings, 1; equaled guaranty.
- Osborne Milling Co., Rineyville, Ky. Inspection sample of Mixed Feed analyzed, 1; too low in protein.
- Owensboro Milling Co., Owensboro, Ky. Inspection samples analyzed, 2.
Mixed Wheat Feed, 1; equaled guaranty.
Omilco 24% Dairy Feed, 1; equaled guaranty.
- Packer Products Co., Chicago, Ill. Inspection sample of Porker Brand 60% Digester Tankage analyzed, 1; too low in protein and too high in fat.
- Paducah Milling Co., Paducah, Ky. Inspection samples of Mixed Feed analyzed, 2; too low in protein; 1 too low in fat and contained cob meal—misbranded; 1 contained crushed ear corn and shuck—misbranded.
- Louis Pallas, Sanders, Ky. Inspection sample of Wheat Bran analyzed, 1; equaled guaranty.
- Parks Milling Co., Richmond, Ky. Inspection sample of A No. 1 Mill Feed analyzed, 1; too low in protein.
- Park City Milling Co., Bowling Green, Ky. Inspection sample of Mixed Feed analyzed, 1; equaled guaranty.
- Park Feed Store, R. 1, Paducah, Ky. Inspection sample of Crushed Ear Corn & Shuck analyzed, 1; equaled guaranty.
- The Park & Pollard Co., Chicago, Ill. Inspection samples analyzed, 3.
P & P Screened Scratch Feed, 1; only traces of oats and milo present.
Lay or Bust Dry Mash, 1; ingredients not as guaranteed.
Wizard Universal Ration, 1; only trace of alfalfa meal present.
- Parksville Roller Mills, Parksville, Ky. Inspection sample of Mixed Feed analyzed, 1; equaled guaranty.
- Penick & Ford, Cedar Rapids, Ia. Inspection sample of Corn Germ Oil Meal analyzed, 1; equaled guaranty.
- Perfection Foods Co., Battle Creek, Mich. Inspection sample of Perfection Dog Food analyzed, 1; equaled guaranty.
- Peters & Bradley Mill Co., Knoxville, Tenn. Inspection sample of Oswegon Feed analyzed, 1; equaled guaranty.
- Philpot Mills, Philpot, Ky. Inspection sample of Mixed Feed analyzed, 1; too low in protein.

- Phoenix Cotton Oil Co., Dyersburg, Tenn. Inspection sample of Phoenix Choice Grade 41% Cottonseed Meal analyzed, 1; equaled guaranty.
- Phoenix Flour Mills, Evansville, Ind. Inspection sample of Mixed Wheat Feed & Screenings analyzed, 1; equaled guaranty.
- Pillsbury Flour Mills Co., Minneapolis, Minn. Inspection samples analyzed, 2.
Palisade A. M. Feed, 1; equaled guaranty.
Palisade B. M. Feed, 1; equaled guaranty.
- Pinnacle Mills, Morristown, Tenn. Inspection sample of Pinnacle Dairy Feed analyzed, 1; equaled guaranty.
- R. C. Poage Milling Co., Ashland, Ky. Inspection samples analyzed, 3.
Wheat Middlings, 1; equaled guaranty.
Cracked Corn, 1; equaled guaranty.
Ideal Stock Feed, 1; much too low in protein.
- Polo Mills Co., E. St. Louis, Ill. Inspection sample of Diamond Dairy Feed analyzed, 1; contained corn gluten feed though not listed.
- Pratt Food Co., Philadelphia, Pa. Inspection samples analyzed, 3.
Pratt's Victory Laying Mash, 1; equaled guaranty.
Pratt's Victory Dairy Ration, 2; 1 only trace of corn gluten feed present.
- Puritan Mills, Inc., Chicago, Ill. Inspection sample of Plymouth Stock Feed analyzed, 1; much inferior to claim—rejected.
- The Quaker Oats Co., Chicago, Ill. Inspection samples analyzed, 10.
Early Bird Chick Feed (No Grit), 1; too low in protein.
Ful-O-Pep Chick Starter, 1; equaled guaranty.
Quaker Ful-O-Pep Egg Mash, 2; equaled guaranty.
Quaker 16% Protein Dairy Feed, 2; equaled guaranty.
Boss Dairy Ration, 1; equaled guaranty.
Quaker Schumacher Feed, 1; excess of oat hulls present.
Quaker Sugared Schumacher Feed, 1; equaled guaranty.
Vim Oat Middlings, Oat Shorts & Oat Hulls, 1; equaled guaranty.
- Ralston Purina Co., St. Louis, Mo. Inspection samples analyzed, 15.
Purina Chick Startena Feed, 2; 1 too high in fiber.
Purina Chicken Chowder Feed (With Charcoal), 2; too high in fiber.
Purina Chicken Fatena Feed, 1; equaled guaranty.
Purina Cow Chow Feed, 3; equaled guaranty.
Purina Omolene Feed, 2; equaled guaranty.
Purina Pig Chow Feed, 1; equaled guaranty.
Purina Special Steer Fatena Feed, 1; excess of ground grain screenings present.

Purina Bulky Las Feed, 2; too high in fiber.

Just Grainola Feed, 1; equaled guaranty.

Randolph Milling Co., Bandana, Ky. Inspection sample of Nu-Joy analyzed 1; no linseed meal present.

M. G. Rankin & Co., Milwaukee, Wis. Inspection sample of Flour Middlings & Screenings analyzed, 1; too high in fiber—misbranded.

Rapier Sugar Feed Co., Owensboro, Ky. Inspection samples analyzed, 20.

Rapier's Blue Hen Growing Mash, 2; equaled guaranty.

Red Dog Flour, 1; equaled guaranty.

41% Cottonseed Meal, 1; too low in protein and too high in fiber; contained excess of hulls.

Rapier's 90% Grain Horse & Mule Feed, 2; too low in protein; 1 too low in fat and contained ground grain screenings though not listed.

Rapier's Teamster Horse & Mule Feed, 1; too low in protein.

Rapier's Otene Horse & Mule Feed, 1; too low in protein; inferior product.

Rapier's Jersey Cream Dairy Feed, 4; 2 too low in protein and too high in fiber; 1 ingredients not as guaranteed—misbranded; 1 adulterated and misbranded; 2 no alfalfa meal or linseed meal present; 1 contained oat product though not listed.

Rapier's Creamo Dairy Feed, 2; 1 too high in fiber and contained only trace of malt sprouts; 1 contained corn gluten feed though not listed; no malt sprouts or linseed meal present.

Rapier's Springtime Dairy Ration, 1; too high in fiber.

Rapier's Golden Rod Dairy Feed, 2; 1 much too low in protein; 1 too low in protein and too high in fiber—adulterated and misbranded.

Rapier's Gold Star Hog Feed, 3; 1 too low in protein; 2 too high in fiber; 1 much too low in protein and fat, no linseed oil meal, corn gluten feed or rice bran present; 1 ingredients not as guaranteed—adulterated and misbranded

Read Phosphate Co., New Albany, Ind. Inspection sample of Read's Red Diamond 50% Meat Scraps analyzed, 1; too low in protein.

Riverdale Products Co., Chicago, Ill. Inspection sample of Chapman's Red Top 60 % Digester Tankage analyzed, 1; equaled guaranty.

G. P. Rose & Co., Nashville, Tenn. Inspection sample of 41% Cottonseed Meal analyzed, 1; too low in protein.

- Rosenbaum Bros., Chicago, Ill. Inspection Samples analyzed, 3.
Vitality Growing Mash, 1; only trace of alfalfa meal present.
Special Rosebro Horse Feed, 1; no linseed oil meal present; only small amount alfalfa meal present.
Will Pay Dairy Ration, 1; too high in fiber; no linseed oil meal present; contained alfalfa meal and grain screenings though not listed.
- Ross & Zeitz Co., Louisville, Ky. Inspection sample of Dandy Horse and Mule Feed analyzed, 1; grain screenings substituted for oat by-product.
- Rossville Grain Co., Lawrenceburg, Ind. Inspection samples analyzed, 11.
Rossville Egg Laying Mash D. G. Special, 1; too high in fiber.
Meadow Farm Laying Mash "K", 1; equaled guaranty.
Fortuna A Horse Feed, 1; too low in protein.
Rossville Red Bird Dairy Feed, 1; equaled guaranty.
Fortuna A-1 Dairy Feed, 2; equaled guaranty.
Fortuna C-1 Dairy Feed, 3; equaled guaranty.
Fortuna F Dairy Feed, 1; equaled guaranty.
Fortuna H Dairy Feed, 1; equaled guaranty.
- Roszell Bros., Lexington, Ky. Inspection samples analyzed, 6.
Roszbrow Scratch Feed, 1; too low in protein.
Roszbrow Horse Feed, 1; too low in protein.
Rex Crushed Horse Feed, 1; too low in protein.
"Roszbrow" 24% Dairy Ration, 2; too low in fat.
Rex 20% Dairy Ration, 1; too low in fat.
- Scientific Milling Co., St. Louis, Mo. Inspection samples of Sunset Dairy Feed analyzed, 2; 1 too low in protein; 1 too low in fat, only trace of ground corn present.
- Sebree Roller Mills, Sebree, Ky. Inspection sample of Shorts analyzed, 1; sample was red dog flour.
- Security Mills, Knoxville, Tenn. Inspection sample of Security Laying Mash analyzed, 1; equaled guaranty.
- Simmons Milling Co., Cincinnati, O. Inspection samples analyzed, 5.
Decko Poultry Fattening Feed, 2; 1 too low in protein; 1 too high in fiber.
Simco Egg Mash, 1; only small amount of ground oats and rice bran present.
Decko Dairy Feed, 1; equaled guaranty.
Simco 24% Dairy Feed, 1; too low in protein and too high in fiber; contained brewers dried grains though not listed.
- Simpson County Mills, Franklin, Ky. Inspection sample of Mixed Feed analyzed, 1; equaled guaranty.

- J. Allen Smith & Co., Knoxville, Tenn. Inspection sample of Peerless analyzed, 1; no corn meal or corn bran present.
- Southern Feed & Grain Co., Louisville, Ky. Inspection samples analyzed, 14.
- Atlas Laying Mash, 1; equaled guaranty.
 - Ideal Laying Mash (With Dried Buttermilk), 1; equaled guaranty.
 - Diamond Wheat Feed & Screenings, 1; equaled guaranty.
 - Ideal Horse & Mule Feed, 2; 1 contained ground grain screenings though not listed; 1 only trace of alfalfa meal present.
 - Eagle Horse and Mule Feed, 1; equaled guaranty.
 - Standard Horse & Mule Feed, 1; equaled guaranty.
 - Standard Dairy Feed, 1; equaled guaranty.
 - Sugar Dairy Feed, 2; equaled guaranty.
 - Eagle Sweet Feed, 1; excess of screenings present.
 - Ideal Sweet Feed, 2; excess of screenings present, 1 contained corn meal and ground beans though not listed.
 - Southern Stock Feed, 1; equaled guaranty.
- Sparks Milling Co., Alton, Ill. Inspection samples of Try Me Mixed Wheat Feed & Screenings analyzed, 2; equaled guaranty.
- Woodford Spears & Sons, Paris, Ky. Inspection sample of Mixed Feed analyzed, 1; too low in fat.
- A. E. Staley Manufacturing Co., Decatur, Ill. Inspection sample of Staley's Corn Gluten Feed analyzed, 1; equaled guaranty.
- Staley Milling Co., Kansas City, Mo. Inspection sample of Hy-Power Mixed Feed analyzed, 1; equaled guaranty.
- Standard Milling Co., Elkton, Ky. Inspection sample of Mixed Feed analyzed 1; equaled guaranty.
- Stevens Grain & Milling Co., Lucasville, O. Inspection samples analyzed, 3.
- Scioto Feed, 1; too low in protein and too high in fiber; adulterated with corn bran.
 - Jays Fancy Mixed Feed, 2; much below guaranty in protein and fat and above in fiber; adulterated.
- The St. Louis Mills Co., St. Louis, Mo. Inspection samples analyzed, 4.
- Gilt Edge 16% Dairy Feed, 2; 1 contained ground grain screenings though not listed.
 - Gilt Edge 24% Dairy Feed, 2; equaled guaranty.
- Suffolk Oil Mill, Suffolk, Va. Inspection sample of Peanut Meal analyzed, 1; equaled guaranty.
- The Sugarine Co., Owensboro, Ky. Inspection samples analyzed, 5.
- Suco Dairy Feed, 1; equaled guaranty.
 - Sugarine Dairy Feed, 2 equaled guaranty.

- The National Dairy Ration, 1; equaled guaranty.
- Ideal Sugared Feed, 1; excess of ground grain screenings present.
- Sutherland Flour Mills Co., Cairo, Ill. Inspection sample of Prize Poultry Feed analyzed, 1; much too low in protein and fat—inferior product, misbranded.
- J. H. Tate & Co., Monticello, Ky. Inspection sample of J. H. Tate & Co.'s Feed analyzed, 1; too low in protein and fat.
- Taylor Co. Milling Co., Campbellsville, Ky. Inspection sample of Mixed Feed analyzed, 1; too low in protein.
- Tell City Flouring Mills, Tell City, Ind. Inspection sample of "A-Mixed-Feed" analyzed, 1; too low in protein.
- Three Minute Cereals Co., The Corno Mills Co., Prop., Cedar Rapids, Ia. Inspection samples analyzed, 4.
- Corno Feeding Oatmeal, 2; 1 too low in protein.
- Corno Hygrade Oat By-Product Feed, 2; 1 too low in protein.
- The Ubiko Milling Co., Cincinnati, O. Inspection samples analyzed, 6.
- Wildcat Scratch Feed, 1; too low in protein.
- Ubiko Growing Mash With Buttermilk, 1; only trace of ground barley present.
- Ubiko Horse Feed, 1; too low in protein.
- "Union Grains" Ubiko Biles Ready Dairy Ration, 2; 1 too low in protein.
- Sunbeam Dairy Ration, 1; equaled guaranty.
- United Mills Corporation, Grafton, Ohio. Inspection sample of Grafton Mixed Wheat Feed & Screenings analyzed, 1; equaled guaranty.
- Upton Mill, Upton, Ky. Inspection sample of Mixed Feed analyzed, 1; too low in protein.
- George Urban Milling Co., Buffalo, N. Y. Inspection samples analyzed, 2.
- Urban's Chick Starter Steam Cooked (With Buttermilk), 1; too low in protein.
- Urban's Laying Mash Steam Cooked (With Buttermilk), 1; equaled guaranty.
- Van Meter & Terrell Feed Co., Lexington, Ky. Inspection sample of Viola Cow Feed analyzed, 1; only small amount of alfalfa meal present.
- Vertrees Co., Sonora, Ky. Inspection sample of "Queen Marie" No Better Dairy Feed analyzed, 1; equaled guaranty.
- The Wallace Milling Co., Huntingburg, Ind. Inspection samples analyzed 6.
- Wallace's Wheat Middlings & Screenings, 3; 2 too low in protein and too high in fiber; 1 contained corn cob and wheat bran—misbranded.

- Wallace's Mixed Wheat Feed & Screenings, 2; equalled guaranty.
White River Dairy Feed, 1; much too low in protein and fat.
- Walton Sanitary Flour Mills, Walton, Ky. Inspection samples analyzed, 3.
Unique Egg Mash, 1; too low in protein and fat.
Big Bone Dairy Ration, 1; too low in protein.
Big Bone Wheat Middlings & Screenings, 1; equalled guaranty.
- Washburn Crosby Co., Kansas City, Mo. Inspection sample of Gold Medal Hog Feed analyzed, 1; equalled guaranty.
- The Washington Milling Co., Washington C. H., O. Inspection samples of Wheat Middlings & Screenings analyzed, 2; 1 too low in protein.
- Weber Flour Mills Co., Salina, Kans. Inspection sample of Tea Table White Shorts analyzed, 1; equalled guaranty.
- Wilkes & McGuire, Pryorsburg, Ky. Inspection sample of Crushed Ear Corn & Husks analyzed, 1; equalled guaranty.
- Winchester Roller Mills, Winchester, Ky. Inspection samples analyzed, 10.
Corn Chop, 2; equalled guaranty.
Mixed Feed, 4; 3 too low in protein; 1 too high in fiber, contained oat hulls—adulterated and misbranded; 2 contained wheat middlings and corn feed meal though not listed.
Kentucky White Feed, 1; equalled guaranty.
Perfection Dairy Feed, 1; ingredients not as guaranteed—misbranded.
O-Kay Dairy Feed, 2; ingredients not as guaranteed—misbranded.
- Woolcott Flour Mills, Lexington, Ky. Inspection samples analyzed, 3.
Ground Oats, 1; equalled guaranty.
Woolcott's Mixed Feed, 2; 1 too low in protein and too high in fiber.
- Zabel Milling Co., New Albany, Ind. Inspection sample of Mixed Wheat Feed & Screenings, 1; too low in protein.
- J. W. Zaring Grain & Mill Co., Richmond, Ky. Inspection samples analyzed, 3.
Bonanza, 1; equalled guaranty.
Zaring's Horse & Mule Feed, 1; equalled guaranty.
Zaring's 20% Dairy Feed, 1; contained corn gluten feed, linseed oil meal and salt though not listed.
- The Zeisler Grain Co., Lucasville, O. Inspection sample of Wheat Middlings & Screenings analyzed, 1; too low in protein.

Ziliak & Schafer Milling Co., Evansville, Ind. Inspection samples analyzed, 3.

Shorts & Screenings, 1; equaled guaranty.

Elite Horse & Mule Feed, 1; too low in protein.

Elite Pig Meal, 1; too low in protein; contained wheat bran though not listed.

